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TREATMENT OF CANKER.

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THE treatment of canker in the horse's foot, whether by caustic dressings or by stripping off the sole, being necessarily accompanied with great suffering to the animal, I would like to bring to the notice of the readers of the VETERINARY JOURNAL a milder method which was very successful in the case of a horse belonging to a battery of Royal Artillery, of which I was in veterinary charge when stationed at Jhansie in 1869.

The entire sole and frog were affected, and the disease had extended between the sensitive laminæ and wall of the hoof, forming a cavity about two inches broad which reached nearly to the coronet.

Being of opinion that the tow with which it is usual to cover the sole had a tendency to encourage the fungoid growth by keeping the parts too moist, I dispensed with everything in the shape of stopping. Every particle of loose horn having been removed and the cheese-like secretion carefully wiped off, the whole surface of the sole and frog was covered with a layer, about a quarter of an inch thick, of very finely-powdered alum. This was also forced with a probe into the space between the laminæ and wall until the cavity was completely filled. The foot was then held with the sole uppermost for half-an-hour in order that as much as possible of the alum might be absorbed. The horse was kept in a stable with a hard, dry, earth floor, and the sole left uncovered so as to encourage evaporation of moisture from the diseased parts. The alum was applied in the above-mentioned manner twice daily, and after some days, when all discharge from the cavity inside the wall

had ceased, a shoe was tacked on for the purpose of assisting in keeping the sole and frog dry, by allowing the air to pass freely under them. The fungoid growth gradually shrivelled up and became desiccated. Alum was steadily applied to any spots from which moisture exuded until, after about three weeks, there was no appearance of any diseased secretion. The foot was untouched for another fortnight, when a perfectly healthy horny sole had formed under the dried fungoid mass.

The horse remained at regular work for fully twelve months, after which I lost sight of him through being transferred to another part of India. Canker is so uncommon in the army, owing to careful stable management, that I had no opportunity of treating another case during the remainder of my service, but think the method I have described well worth a more extended trial on account of its painlessness.

TUBERCULOSIS.

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THE disease tuberculosis is known by a variety of names, as consumption, phthisis, wasting disease, pearl disease and many other synonyms.

Tuberculosis affects man and all of his domesticated animals, but is much more prevalent in cattle than in the other species, although it is frequently meet with in the pig, and is rare in the sheep, goat, dog, and horse. Even the hen is not exempt from this disease and flocks are sometimes decimated by its ravages.

The ancient medical authors were familiar with tuberculosis, and until 1882 a great number of theories had been advanced to account for its origin. In 1882 Koch announced his discovery of the bacillus or germ of tuberculosis, and this discovery has since been confirmed by numerous scientists in all parts of the world.

This germ, which is the same in man and all species of animals, is a small, rod-shaped organism, from one seven-thousandth to one ten-thousandth of an inch long, and one-tenth as broad.

Small oval spores form within this minute bacillus; they are liberated and develop into mature forms like their parents.

These germs may be cultivated outside of the animal body by transferring a few of them to coagulated blood serum or other suitable culture medium contained in a small glass

tube plugged with cotton. If this tube is kept at the temperature of the body the serum gradually becomes covered with a number of white stripes and points which represent millions of the microscopic bacilli.

Animals inoculated with material from a culture prepared in this way develop tuberculosis

We are able to recognize the presence of tuberculosis in the dead animal by the characteristic tubercles—the formations which give the disease its name. These tubercles are small, hard masses which may be present in almost any part of the body, but are most frequently found in the lung, pleura, peritoneum, liver, intestinal walls and the lymphatic glands belonging to these organs.

A tubercle is, at first, a small, greyish, opalescent mass, the size of a millet seed, which may be single, or a number may form side by side, thus making a large diseased area.

As the tubercle—or, if many occur together, the tubercular mass—grows older it becomes yellow, and from the cessation of the flow of blood through the diseased part it gradually softens and forms a cheesy mass. This cheesy mass may soften still more and become of the consistency of cream, or it may, from the deposition of lime salts, become stony hard. When present in the interior of organs as the lungs or liver, the former condition is most frequently met with, and large cavities filled with a yellowish, thick fluid mass, usually known as tubercular abscesses, are common. If the disease affects the surface of an organ, or the thin membrane covering it as the pleura or peritoneum, the growth is usually hard and nodular. The normally smooth and glistening surface is dotted or thickly studded with round, hard masses, ranging from the size of a mustard seed to that of a grape.

Immense numbers of these tubercles may conglomerate to form a collection of diseased product as large as an apple, or even a muskmelon. Such masses sometimes exist in the thoracic cavity between the lungs and the chest wall.

The lymphatic glands are very commonly diseased and sometimes reach enormous proportions. If one of these diseased glands be cut across it will be noticed that small yellow spots dot the cut surface, or these may be so numerous as to have consolidated, and the entire centre of the gland is taken up by this abnormal cheesy substance. In other cases the gland becomes hard and gritty from the deposition of lime salt.

If the udder is affected, yellow spots or tubercles are discernible on the cut surface, the entire quarter is enlarged and

hard, and the lymphatic glands of the udder are usually enlarged and tuberculous.

If a tubercular mass be examined microscopically it will be found that those tubercles near the circumference of the diseased area contain the largest numbers of active tubercle bacilli, and that these germs are thus favourably situated to invade the surrounding healthy tissue, or to be carried by the lymph or blood vessels to distant parts of the body and there set up the tubercular process.

When these germs once gain a foothold in the system and tubercles, develop the tendency is always for them to multiply and for the disease to spread.

Exceptional cases of recovery in the very beginning of the disease may take place, but such an occurrence is excessively rare in the domesticated animals.

Tuberculosis is of wider distribution than any other disease. It is found among the cattle of almost all parts of the world, but is much more common in some places than others. It is said that it does not exist in the Polar regions, in the north of Sweden and Norway, or on the steppes of Russia. Wild animals are, in general, free from it, and the disease has not yet been discovered in parts of Africa and South America. Civilization carries tuberculosis in its wake, and as countries become settled and built up this disease appears.

The country in the vicinity of large cities contains a larger percentage of tuberculous animals than more remote localities. It is not, however, the proximity of the city which leads to the prevalence of the disease, but the system of housing and caring for the animals which is practised in such districts.

In certain parts of Europe twelve per cent., and perhaps more, of all the cattle are tuberculous.

It is exceedingly difficult to say just how prevalent the disease is in the United States, as but few statistics have been collected, but in certain small localities nearly all of the herds are affected, and in some of them from twenty-five to seventy-five per cent of the animals are diseased. From November 1, 1888, to November 1, 1889. Dr. Faville* examined 5,297 cattle killed in the vicinity of Baltimore, and found 159 cases of tuberculosis, or more than three per cent.

The disease is by far more prevalent in some races of cattle than others, and is much more common in the milk than the beef breeds. Cattle bred in countries with a mild, uniform,

*The inspection of meat and milk with special reference to tuberculosis, by Mr. A. W. Clement, V. S., *Maryland Medical Journal*, February 1, 1890.

moist climate frequently become victims of this disease when subjected to our changeable weather. Nathusius says that in some parts of Holland fifty per cent. of the cattle have tuberculosis.

Tuberculosis is the most dreaded and common disease among the animals in zoological gardens, and sometimes affects animals in these places which are not known to suffer from it in nature. This shows the influence of confinement, and indicates that exercise and pure air are potent factors in preserving the health of animals.

As stated above, Koch demonstrated that the tubercle bacillus is the sole exciting cause of tuberculosis, but there are other accessory or predisposing causes of the disease which it is important to consider.

Every influence which weakens the constitution or resisting power of the animal is a predisposing cause and favours the development of the disease when the germs are present.

Consumption is not developed in every animal which inhales or ingests the germs, because all animals are not equally predisposed. This matter of predisposition is so important that it was formerly thought that the disease might be caused exclusively by close stabling, poor ventilation, feeding on innutritious foods, in-breeding, excessive yield of milk, and, in short, all of the weakening influences of domestication. Where these depressing causes exist it is much easier for tuberculosis to start and spread than where they are absent. But no matter how weak a cow is or how little vitality she may have, she can never develop tuberculosis unless the germ—the bacillus—is introduced into her system.

Where does this bacillus come from?

In a very small percentage of the cases the animal is born with the disease, that is, it is inherited directly from the mother, but this is excessively rare. In the vast majority of cases the disease is contracted after birth through association with diseased cattle. If the dam has tuberculosis the offspring may contract it through partaking of the milk, or if the dam is healthy, or the young animal escapes this danger by virtue of a very vigorous constitution, the poor creature may succumb when brought into association with animals which are constantly exhaling the germ of the disease.

When the lungs are badly affected the diseased animal exhales and coughs out large numbers of tubercle bacilli which float in the air, either at once or after they have become dry and formed dust particles. These bacilli, when inhaled, lodge on the lining membrane of the air passages, and if

everything is favourable (for the bacillus) multiply and start a centre of disease.

These favourable conditions consist in a slight inflammation of the mucous membrane, as a slight bronchitis or catarrh, or a depression of the system, or anæmia, or as an inherited weakness and lack of resisting power. If the conditions are unfavourable the bacillus is expectorated or is destroyed by the cells where it lodges. The g reater the number of bacilli inhaled the greater the chances that some will become established and mutiply. It is for this reason that poor ventilation is such a great aid in the development of the disease; there is not a sufficient supply of pure air to dilute the exhalations of the diseased animals, and these are inhaled in a concentrated form by the healthy animals.

For the same reason, also, the disease is much more apt to pass to the cow next to a diseased one than to pass across the stable and affect an animal on the opposite side.

The disease is unquestionably contagious, and numerous instances have been published in which it has extended along a row of cattle in both directions from a subject of tuberculosis.

Other cases have been observed in which a purchased cow has brought the disease into a herd and initiated a disastrous outbreak. Occurrences of both of these classes have come under the personal observation of the writer. Cases are also known in which the disease has been conveyed from a bull to a healthy cow by the act of copulation.

How may we recognize tuberculosis in the living animal?

Since so many different organs and parts of the body are affected by this disease the symptoms vary greatly in different cases so that no typical picture of the disease can be given.

In the beginning stages it is almost impossible to recognize the affection no matter in what organs it may be situated.

The changes are so slight that the functions of the organs are not seriously interfered with and no recognizable symptoms are developed. In more advanced cases the symptoms depend upon the location of the disease. If the case is one of tuberculosis of the lungs there is at first a dull, short cough, which gradually becomes worse, and is observed especially after drinking or moving about, or getting up. Pressure upon the chest walls or withers causes pain, which is evidenced by shrinking from the hand and by grunting. Percussion of the chest reveals, in some cases, a dull area which is produced by a solid mass within the thorax.

In other cases the sounds on percussion are normal.

Auscultation in cattle is not very satisfactory, but quite frequently, in cases of tuberculosis, alterations of the normal lung sounds are heard which bear witness to tubercular change.

If the disease has existed for some time general symptoms develop as emaciation, harsh coat, dry skin, sunken eyes, etc.

Indigestion and bloating are frequent symptoms of severe cases, and animals sometimes die during such attacks.

The superficial lymphatic glands are often enlarged and hard, especially the intermaxillary; axillary, cervical, inguinal, mammary, etc.

When the alterations are confined to the serous membranes the disease is most difficult of diagnosis and all symptoms may fail.

Fat cattle, in seemingly perfect health, have been slaughtered and enormous tubercular growths found on the pleural and peritontal surfaces.

The disease is sometimes met with in the udder and is sometimes confined to this organ. But this alteration is, fortunately, not very common. Udder lesions are evidenced by a diffuse, painless swelling, which is tense and hard. The milk is at first normal (apparently) in quality and quantity, but in a few weeks or months it becomes thin, watery and mixed with small clumps.

The swollen part becomes hard until, finally, it feels like a block of wood.

The course of a case of tuberculosis is usually long, the animal gradually sinking for months or years until, at last, it becomes so poor and weak that it dies of exhaustion. Sometimes diarrhœa hastens the fatal end. In other exceptional cases the disease runs a rapid course and carries the subject away in a short time.

The recognition of tuberculosis in man does not offer the difficulties that are met with in attempting to diagnose it in cattle. This is partly because the method of examination can be more exactly carried out in the human patient, partly because the patient's account of his own symptoms is of aid, but chiefly because in man the sputum can be examined microscopically, and the bacilli, if present, detected.

Cattle do not expectorate, and the mucous contains very few bacilli, so that this great aid cannot be employed in veterinary practice.

Friedberger and Froehner (*Specielle Pathologie und Therapie der Hausthiere*, Stuttgart, 1889) advise an examination of the

milk as the most reliable method of detecting doubtful cases.

It is always difficult and frequently impossible to find the bacillus in milk, but since, according to the researches of Bollinger and others, milk from tuberculous cows is very often capable of causing the disease in guinea pigs when injected under the skin or into one of the body cavities, even when the bacillus cannot be found it is surmised that such milk contains spores of the germ.

Friedberger and Froehner give the following advice in regard to these examinations:

"The milk sometimes contains large numbers of tubercle bacilli which can be detected microscopically by staining them.

"But more frequently in cases of tuberculosis the milk seems to contain no bacilli but only spores, which cannot be discovered with the microscope. On this account the bacteriological examination of milk is unreliable. We have even failed to find the bacilli in the milk of well-developed cases of tuberculosis of the udders.

"According to Bollinger the milk of eleven out of twenty cows suffering from pearl disease was infectious, although the actual bacilli could be discovered in but one sample

"In such cases which cannot be reached with the microscope the inoculation of experimental animals with the suspected fluid is the only safe course.

"According to the experiments of Arloing, Bollinger, Verneuil, and others, the guinea pig is better for this purpose than the rabbit. A small quantity of the infectious material is placed into the abdominal cavity, and miliary tuberculosis develops with its characteristic anatomical and microscopical lesions.

"In connection with the detection of the bacillus with the microscope, *this experimental inoculation of guinea pigs must be designated the best aid that we have for the diagnosis of tuberculosis in the living animal.*" (September, 1888.)

From the above account of the disease, tuberculosis, it will be seen that it is exceedingly dangerous to have a tuberculous animal about, and that it is exceedingly difficult to detect the disease before it has reached an advanced stage.

Some means of diagnosing the disease in its early stages before it has become so advanced as to render its subject dangerous to their associates and the milk dangerous to man, has been long and earnestly sought. But it remained for Koch, the discoverer of the cause of the disease, to find a safe means of diagnosis.

INFLUENZA, OR "LA GRIPPE," IN THE HORSE.

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It is now almost universally admitted that the old designation of "Influenza," or the "Typhoid Affection," comprises at least two very different clinical forms—the *Typhoid Fever* and *Infectious Pleuro-pneumonia*. This duality is implicitly consecrated by the very numerous works published in every country on each of these two affections. In a study of my own, which appeared some years ago,* I was compelled to establish the universality of this division, and also to fix the concordance between the diverse appellations proposed.

Are these two forms, which are now well determined, so far as their clinical characters are concerned, sufficient to include all the known forms of Influenza? Or, on the contrary, is their diagnosis precise enough to exclude certain varieties? This is the question we now propose to study here.

In 1883, Friedberger† discovered at Munich and its environs a "catarrhal form" of Influenza, marked by catarrh of the upper air-passages and the icteric tint of the mucous membranes. This affection was, besides, distinguished from the ordinary form of Influenza by the absence of disturbance of the circulation, and the slight gravity of the general symptoms. Soon after this time, Dieckerhoff,‡ of the Berlin Veterinary School, in describing the different clinical varieties, noted that "there is often observed a catarrhal affection of the respiratory mucous membrane, and this condition is sometimes complicated with pneumonia." In the following year he clearly indicated the necessity for a new grouping.§ "Among the maladies included in influenza, there must be distinguished, besides the infectious pleuro-pneumonia (*Brustseuche*): 1. An ephemeral, febrile *broncho-pneumonia*, which is only an attenuated form of the latter. 2. The *Scalma*. Under this name, "Scalma" (from the high German *Schelm*, which in the Middle Ages designated a malignant disease) ought to be comprised a febrile "infectious malady," apparently due to a miasma, and characterised by a diffuse inflammation of the air-passages, with cough and nasal discharge, complicated with anæmia of the mucous membranes,

* Annales de Médecine Vétérinaire, 1887, p. 490.

† *Ueber Influenza.* Munchener Jahresbericht, 1883, p. 27.

‡ *Ueber den Verlauf der Pferdstaupe in* 1883. Wochenschrift für Thierheilkunde, 1884. No. 19.

§ *Neu Beitrage zur Frage der Influenza.* Wochenschrift für Thierheilkunde, 1885, p. 1.

rapid emaciation, persistent debility, and, in serious cases, diffuse exudative pleurisy."

The vague differential tentatives already formulated have meanwhile held their ground. Does the Scalma of Dieckerhoff constitute a sufficiently characteristic form? The first response to this question is given by Flemming,* who entirely adopts the new division. "It is necessary," he says, "to distinguish, besides typhoid fever and infectious pleuropneumonia, a contagion of the stables, to which Dieckerhoff has given the name of Scalma." But this is, in truth, the only direct approbation the new classification has met with in Germany; though a simple analysis of the following facts is sufficiently convincing.

In 1888, Army Corps Veterinary Surgeon Zorn † reported having observed during the first half of that year "an acute contagious catarrh of the air-passages. In a large number of horses there was marked debility and excitement. The principal symptoms were a dry, harsh and loud, but not very painful cough, followed by nasal discharge. The appetite was but little diminished. The malady was very different from the contagious pneumonia of Schütz."

Rust‡ at the same time described an epizooty of affections of the air-passages, characterised by the frequent co-existence of bronchitis and laryngo-tracheitis. In all the cases there was an elevation of temperature at the commencement. During the same year Bongartz§ observed, concurrently among army and civilians' horses, an infectious catarrh bearing much resemblance to Influenza, and manifesting itself by cough, nasal discharge, and tumefaction of the submaxillary lymphatic glands. The disease was extremely contagious, and attacked horses of all ages indifferently.

The report of the Prussian Military Service for 1888‖ contains precise documents on the malady. This prevailed in fifty-nine regiments, and chiefly in the laryngo-tracheitic form. The contagion was very subtle. There was cough, nasal discharge, and tumefaction of the submaxillary lymphatic glands. Sometimes the inflammation extended to the

* *Influenza der Pferde.* Rep. der Thierheilkunde, 1887, p. 130.

† *Ein Leuchenartig Auftretender Acuter Kehlkopf-Luft V. öhencatarrh beim Pferden.* Wochenschrift für Thierheilkunde, 1888, p. 249.

‡ *Ueber ein Neue, in diesem jahre unter dem Pferden Deutschlands aufgetretene Seuche.* Schneidemuhl's Rundschau, 1888, p. 36.

§ *Ueber einen Infectiösen Catarrh der Pferde.* Berliner Thier. Wochenschrift, 1888, p. 134.

‖ *Infectiöser Catarrh der Respiration schleimhaute.* Zeitschrift für Veterinärkunde, 1889, p. 348.

bronchial mucous membrane. The visible mucous membranes were pale or yellowish. The horses remained for a considerable time very weak and predisposed to inflammation of the lungs and pleura.

In 1888, the affection was described in France by Joly* in a very interesting communication. According to this authority, "this manifestly infectious bronchitis, which was diffuse and in a subacute form, corresponded somewhat closely to the malady described by the name of *Scalma* in Dieckerhoff's Treatise on Veterinary Pathology. It prevailed in the remount annexe of Bellac, and 75 of 225 horses were affected.

In 1889, the German veterinarian, Rosenfeld,† observed an "infectious catarrh of the respiratory passages" among the horses belonging to two batteries of artillery. He chiefly noted the cough, the nasal discharge, the tumefaction of the subglossal glands, and the pale rose-tint of the mucous membranes.

The Prussian Military Report for 1890‡ again notices an "epizootic catarrh of the respiratory passages," and some interesting particulars are given with regard to its pathogeny.

The Scalma was also met with and studied in America by Hu[illegible]dekoper. "It is an infectious and contagious disease of the horse, with local lesions in the bronchi, trachea and larynx, as shown by the nasal discharge. Confounded with other maladies, it has no equivalent in English works."§

It is also the same affection that Cagny‖ has described as "a little known form of the typhoid affections," and he correctly indicates the pale and slightly yellow tint of the mucous membranes. He proposed to name it "false anæmia."

This review, although very incomplete, is sufficient to establish the legitimacy of Dieckerhoff's differentiation; *for there undoubtedly exists among the "typhoid affections," a clinical form that differs from the classical typhoid fever and infectious pleuro-pneumonia in the horse.* In reality, this distinction is a century old, for it is Scalma that Niemann and Hurtrel

* *Note au Sujet de la Bronchite Epizootique.* Recueil de Méd. Vétérinaire, 1888, p. 612.

† *Infectiöser Catarrh der Luftwege.* Zeitschrift für Veterinärkunde, 1890, p. 431.

‡ *Die Krankheiten der Athmungs Organe.* Preuss. Militär. Rapport, 1890.

§ *Special Report on Diseases of the Horse.* Annual Report of the Veterinary Department for the year 1890, p. 496. It is easy, however, to recognise Scalma in certain forms of Influenza which has been described in England of late years.

‖ *Quelques Observations sur les Affections Typhoïdes du Cheval.* Recueil de Méd. Vétérinaire, 1891, p. 277.

d'Arboval describe under the names of Influenza or Grippe. It was also Scalma that Zundel studied in 1874, by the name of Influenza, in the *Dictionnaire de Méd. Vétérinaire*,* and gave the credit to Falke, of Jena, of having distinctly separated it from the typhoid diseases.† According to this authority, the Influenza or *Grippe of the horse* is characterised by "bronchial catarrh, with fever, apathy, and dejection, and more particularly by a remarkable debility that is not in relation with the local lesions observed." The identity with Scalma is evident.

The bibliographic references—otherwise very incomplete—given by Zundel, at least prove that the affection has been differentiated during the first half of this century, and that confusion only arose after the acceptance of a conception which was quite theoretical—that of the unity of the "influenza affections," maintained in France by Lafosse, and in Germany by Haubner.

Dieckerhoff has, therefore, effected a resurrection which is not without interest.

Before attempting a clinical study of the malady, it is necessary to make choice of one of the proposed appellations; and as for all the affections the nature of which is not yet known, the best vocable is the most significant, the name *Scalma* would answer admirably if its Germanic construction did not render it difficult of acceptation by Latin people. That of *Influenza* is already too much compromised to be adopted; while the designations of *infectious bronchitis* and *catarrh of the respiratory passages* are in several respects inexact, as the inflammation is not localised either in the bronchi or the respiratory mucous membrane. Finally, its assimilation with *infectious anæmia*, the name proposed by Fröhner, cannot be seriously intended, as I hope to demonstrate in the course of this study. There, then, remains the word *grippe*, already employed by Hurtrel d'Arboval, and many times reproduced since his time. It may be objected, it is true, that the name had been previously employed to designate a human disease, but this inconvenience is very trifling, and the French word will therefore be employed here.‡

* *Influenza.* Dictionnaire de Méd. Veterinaire, 1874, vol. x., p. 337.

† The Grippe is several times mentioned in the *Comptes Rendus* of the Alfort Clinic. See the Recueil de Med. Vétérinaire, 1833, p. 521. (Under the designation of Influenza or some other name, this Grippe or Scalma has been described in English veterinary literature for very many years.—Ed. *V. J.*)

‡ Huidekoper proposed the name Whooping-Cough (*coque-luche*), which has the same inconvenience as the word *grippe;* but the latter cannot be chosen because its English equivalent is *influenza.*

CLINICAL STUDY OF THE GRIPPE.—I observed the grippe at the Clinic of the Alfort Veterinary in the spring of 1891. The affection had prevailed in an enzootic manner in the environs of Paris, attacking successively every stable, yet never distinctly assuming the enzootic character of typhoid fever. It is upon notes which I then took that I base this study.

The *elevation of temperature* is constant from the commencement, and it generally rises to 39° to 40° Cent.—rarely exceeding the latter to attain 41·5° to 42°. In a total of 345 cases observed by Rust, 253 horses had a temperature of 39°, in 63 it rose to 40°, but in only two did it reach 41·5° and 41·8°. From the earliest manifestation of the disease, the thermic elevation attained its maximum and gradually decreased if the evolution of the malady was regular. This thermometric aspect of the *grippe* has been studied by Joly, and his observations have been confirmed by those of all other observers.

At the same time there is a state of *nervous depression* more or less marked, but it is always less intense than that which accompanies typhoid fever, from which it also differs. The patient is not stupefied as in typhoid fever, but seems to experience only a sense of intense fatigue; it is less sensitive to stimulation; the head remains pendant; and one of the posterior limbs no longer supports the body but rests only on the toe. Sometimes *tremors* of the muscular masses of the shoulder or thigh are observed. The *appetite* is modified to a variable extent, according to the temperament of the animals and the intensity of the malady. In only a few inappetence is complete during twelve to twenty-four hours; heavy draught horses, which are abundantly fed, often refuse their oats, but entirely consume the ration of hay, and even eat straw.

The visible *mucous membranes* offer an altogether particular and characteristic aspect. Always very anæmic, they are slightly rose-tinted or altogether blanched, and most commonly a yellowish hue is superadded, in this way giving a combination of tints from a very faint saffron to a pale yellow. We have never remarked the coloration, the infiltration of the conjunctivæ, nor the gingival line of typhoid fever.

The *respiration* is slightly accelerated at this first stage; the *pulse* is normal in quality but slightly increased in frequency, and, as Joly has justly remarked, the modifications in the number of pulsations and respirations are in no sense related to the variations in the temperature.

About the second or third day other symptoms appear. There is a dry *cough* which is sometimes strong and spasmodic, sometimes plaintive and interrupted. Pressure on the larynx, and frequently also on the trachea in its upper third, induces a fit of coughing. The sublingual glands are infiltrated and painful, but they rarely suppurate; while the animal objects to exploration of the throat and parotidsal regions. The nasal discharge afterwards appears; this is at first mucus, then muco-purulent, its abundance and characters varying according to the extent and localisation of the lesions. At the same time the pain becomes less acute, and the temperature diminishes so as to reach the normal standard in the majority of the patients. The general condition is not much modified; the appetite returns and also the liveliness; but the mucous membranes retain their pale hue.

From this time there are exclusively observed the signs of a catarrhal inflammation of the mucous membrane of the larynx, trachea, bronchi, or pharynx, with predominance of the disturbances or special localisation at some particular point. So that cough, alimentary discharge, difficulty in swallowing, local tumefaction and engorgement of the submaxillary glands, etc., are noted if the pharynx is invaded. Inflammation of the laryngeal mucous membrane is at first indicated by sneezing, then by cough, enlargement of the sub-maxillary lymphatic glands, extreme sensibility of this and the parotideal regions, and a white foamy nasal discharge. Bronchitis is revealed by a fitful cough, a muco-purulent discharge, and bronchial *râles* at variable parts of the thorax. The lesions never offer the same intensity at all points, and according to the localisation in the upper air passages or the bronchi, two symptomatic groups might be established.

It would appear that the "grippe," like certain other infectious maladies, assumes the same aspect in the same region. In about fifty recorded observations, I find only two of bronchitis, whereas Dieckerhoff, Joly, and Huidekoper have most frequently met with this localisation.

Besides these ordinary manifestations of the "grippe," others are also exceptionally remarked. Thus there have been noted extensive *thermic oscillations*, independent of any appreciable organic lesion, and functional disturbance of the heart most probably due to infectious myocarditis. In some cases pleurisy also supervenes, and this is usually unilateral; it is manifested by sensibility of the thoracic walls, the character of the respirations and the cough, and by some intra-thoracic effusion. Very exceptionally there are foci of

suppuration in the retro-pharyngeal lymphatic glands, the sub parotideal connective tissue, or in the brain.

Nervous disturbances are sometimes remarked during the course of the malady; they are mentioned in a number of German reports and have been particularly studied by Huidekoper. The animals so affected are restless and continually move about in their loose-box; the entrance of any person startles and irritates them. "In some of them very alarming laryngeal spasms are produced. The head and neck are extended and the muscles contracted; the animal makes efforts to cough and then falls down. The respiration is very short and extremely hurried; the patient lies stretched and immovable on the ground, and appears to be suffering from impending and rapid asphyxia; then, suddenly, there is a long inspiration and all becomes normal."*

These complications, however, are altogether exceptional, and, as a rule, the evolution of the malady is complete in about fifteen days; though for several months there is manifest weakness, the mucous membranes preserve their pale and yellowish coloration, and the animals are a long time before they regain their primitive vigour. Sometimes also the cough does not disappear for several weeks.

The *diagnosis* of the "grippe" does not present any difficulty, and it may be recognised at once as an enzoöty characterised by an initial elevation of temperature, associated with decoloration of the visible mucous membranes, and signs of catarrhal inflammation of the respiratory mucous membrane.

The disease does not cause much apprehension of loss, the mortality being about 1 per cent. of those attacked; in many cases it is quite benignant. But, from an economic point of view, it is a serious malady, because of its extreme contagiousness and the debility that remains from it.

At the necropsy of animals which have succumbed to the complications of the "grippe," we meet with the lesions of pleurisy, unilateral or bilateral, but having no special characters. In other cases there is pneumonia or pleuro-pneumonia. Death may also be determined by the evolution of abscess in the vicinity of the larynx or trachea. In the descriptions of some necropsies, there have only been noted a slight inflammation of all the serous membranes, tracheitis, and the lesions of mild enteritis (Rust). *(To be continued.)*

* Cagny (*loc. cit.*, p. 279) relates an analogous fact. Among the possible *sequelæ* of the "grippe" figures asthma (*pousse*), and paralysis of the œsophagus, observed by the German veterinarians. As in strangles, abscess of the brain appears to be somewhat frequent, according to the testimony of Rugg, Thierry, Czoskor, and Schlake.

IRREGULAR DENTITION IN HORSES.

BY E. WALLIS HOARE, F.R.C.V.S., CORK.

IN the December issue of the VETERINARY JOURNAL there appears an interesting case of peculiar dentition in an Arab pony, described by Veterinary-Captain D. C. Pallin. I have a specimen in my possession presenting similar appearances, with this difference, however, that in this specimen the milk teeth are only retained in the lower jaw, the corner incisors of the upper jaw being fully developed permanent teeth, such as would be present in a six-year-old mouth.

The animal from which the jaw was taken was an Arab pony, who dropped dead while at active exercise in the polo field. His owner, a cavalry officer, believed his age to be six years.

With the exception of the lower corner incisors, as mentioned, the mouth presented all the appearances of this age.

The temporary corner incisors showed no sign whatever of being shed. On careful observation of a large number of horse's mouths at different periods of the year, it is often surprising what great deviations occur from what we are accustomed to recognise as the ordinary appearances at certain ages. The mouths of animals born at different periods of the same year often exhibit the most diverse conditions, which sometimes puzzle even the experienced. I have another specimen of a jaw, taken from a horse which died in the month of February last. The middle incisors are triangular in shape, similar to the appearances seen in a seven-year-old mouth. The laterals are also well worn, with rather a shell appearance. In the corners there appear temporary incisors very much worn down, and just posterior to these the thin edge of the permanent incisors is seen in each corner just commencing to cut through. The tusks are fairly developed.

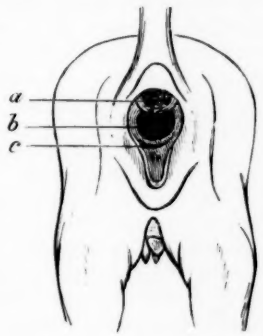
In another case, I have seen a perfectly-developed six-year-old mouth in a gelding, with the tusks just cutting through. In another specimen both lateral and corner incisors have no posterior tables developed, the anterior tables are much thicker than usual and well worn, as also are the central teeth. This animal was known to be rising six years, being a trooper, and his age registered.

RUPTURE OF THE PERINÆUM IN A MARE.

BY VETERINARY-CAPTAIN J. A. NUNN, PRINCIPAL LAHORE VETERINARY COLLEGE; AND VETERINARY-LIEUTENANT L. J. BLENKINSOP, VETERINARY SURGEON TO THE PUNJAB GOVERNMENT AND PROFESSOR LAHORE VETERINARY COLLEGE.

THIS case of rupture of the perinæum was a grey country-bred mare, 14½ hands high, 9 years old, and in very poor condition; she was destroyed on June 20th, 1892, in consequence of being affected with glanders. The history of the case was that two years ago, when in the possession of a native Pathan horse-dealer, the mare foaled—great violence was resorted to in delivering her, and as a consequence the perinæum was ruptured. In this condition she remained during the two years, being passed from the hands of one dealer to another without any attempt at treatment being ventured upon.

On lifting up the tail a common or cloacal opening was seen, the rectum and more than two-thirds of the posterior portion of the vagina forming one cavity. This opening was circular above, with a prolongation or lip formed by the inferior commissure below; it was three inches wide by four inches in length, and permitted a full view into the common canal. The os uteri was widely dilated four inches transversely, as shown in the sketch, the distance between the external and internal os being a fourth of an inch. The rectum could be seen above and the meatus urinarius below. The sphincter ani was destroyed, but power seemed to be retained over the constrictor vesicæ, as there was no incontinence of urine; the fæces, however, were passed involuntarily along with a great quantity of flatus, which was increased on manual exploration; this also gave rise to violent expulsive efforts, the meatus urinarius being forced backwards almost to the vertical plane of the external orifice. The clitoris appeared to be much atrophied, and the valve of the meatus urinarius considerably hypertrophied. The malformation was apparently caused by rupture of the perinæum, including the sphincter ani, sphincter cunni, and the



a. Rectum; *b.* Os uteri; *c.* Meatus urinarius.

recto-vaginal septum to within a few inches of the external os uteri.

The measurements taken in the living animal were as follows:—

From os uteri to tuberosity of the ischium ..	7 inches.
From external os uteri to fundus of uterus ..	15 „
Transverse diameter of uterus	7 „
From superior rim of external orifice of rectum to margin of recto-vaginal septum	3 „
Transverse diameter of rectum	3 „
From external orifice of meatus urinarius to posterior extremity of symphisis ischii ..	5½ „

The mare had a drooping quarter and the sacro-sciatic ligament was greatly relaxed. The writers consider that the final stage of labour did not proceed beyond the expulsion of the membranes, with permanent contraction of the uterus. There was very little congestion of the vaginal mucous walls, but, on the other hand, the uterine mucous membrane was highly congested and covered with a muco-purulent exudation. It is extremely probable that the mare did not go her full time, and that abortion was procured, as it is a common practice with the class of native dealers to whom the mare then belonged. It was also stated that three or four men were employed in pulling the foal away, and probably this amount of force was exercised before the parts were properly relaxed.

FOREIGN BODY IN THE HEART OF A MARE.

BY E. WALLIS HOARE, F.R.C.V.S., CORK.

On December 10th, I was consulted by a farmer with reference to a mare, which for some time had been pining and out of condition, although feeding fairly well.

On examination I found the animal almost reduced to a skeleton; pulse intermittent, and great tenderness in pressure of the left side of the thorax.

The owner stated that he had frequently administered purgatives without any effect; also that the animal showed great distress on going up a hill.

Tonic remedies were prescribed. About a week after, the owner stated that the mare died rather suddenly; and being of rather a curious turn of mind, he had made a *post-mortem* examination with the following result:—The stomach contained a large number of small, very hard stones, and in addition a large darning needle in two pieces. There was a large amount of fluid round the heart, and a large needle was found firmly imbedded in the right side of the organ. The specimens were brought in by the owner.

A BIT FOR WIND-SUCKING HORSES.

BY VETERINARY-CAPTAIN JAMES MILLS, A.V.D., PRINCIPAL BOMBAY VETERINARY COLLEGE.

THIS bit has been made with the view of preventing wind-sucking in horses. It can be worn while the horse is at rest in the stable, or in the form of a bit while at work.

Even if a horse can indulge in the habit of wind-sucking while the bit is in his mouth, which is doubtful, the air he sucks, instead of finding its way to the stomach, passes out at each side.

I have tried it for some months on several confirmed wind-suckers, and, without exception, all have improved in condition while they had it on.

The bit can be procured from Messrs. Arnold and Sons, London.

Editorial.

HUMAN SCARLATINA AND BOVINE MAMMARY ERUPTIONS.

FROM time to time, during outbreaks of diphtheria and scarlatina in the human population in this country, the opinion is expressed—usually in the official reports of medical investigators—that such epidemics are of bovine origin, and have their source in milk consumed by the affected people, which has been drawn from diseased mammæ. And not only has this opinion been promulgated by those who have pursued their inquiries among the patients and the cowsheds whence the milk was derived, but attempts have been made to establish its correctness by experimental demonstrations, and with success, if we are to accept the published results of these experiments as reliable.

Now, if diphtheria and scarlatina are really derivable from the mammary glands of the cow, then if we are to believe in the specific nature and autonomy of these maladies we must expect to find them affecting that animal in a recognisable form. But no disease like scarlatina has yet been detected in the cow, and all attempts to infect it with human scarlatina have hitherto failed, which one would scarcely expect if the latter were of bovine origin. This insusceptibility

of cattle to scarlatinal infection is strong proof, one would think, that it is not a disease of cows, and all the clinical experience of the most talented veterinarians supports this view. The only mammary affection that can be transmitted to mankind from the bovine species, so far as is known with certainty, is cowpox, and this disease is far from being rare. But that milk may be the medium for the transmission of human infections is a well-established fact—it is indeed found to be an excellent fluid for the cultivation of certain disease germs; and because of this, one is apt to conclude, when an outbreak of disease has been clearly traced to milk distribution, that this fluid has been contaminated after it has left the cow.

A striking instance, among the number of cases in which scarlatina is supposed to have been due to diseased cows, has occurred quite recently, and as it is a good illustration of the way in which mistakes occur, it may be referred to here. An outbreak of scarlatina occurred in Glasgow last August, and among people who had obtained their milk from a certain dairy near that city. Investigation by a medical man could trace it to no other source than an eruption on the teats of the cows. The cows were, therefore, considered to be the *fons et origo mali*, and this conclusion appears to have been accepted as satisfactory by the medical officers of health. But Professor McCall also inquired into the epidemic, and his conclusions were decidedly antagonistic to those arrived at by the medical investigator. He found that the cows had been affected with teat eruptions for twenty-four days prior to the outbreak of scarlatina among the consumers, and that during all these twenty-four days, not only did the consumers of the milk remain perfectly free from scarlatina, but the milkers about the farms, though inoculated with the virus from these teat eruptions, and drinking the milk from the cows alleged to be suffering from scarlatina, remained perfectly free from scarlet fever. The dairy-keeper's wife, though inoculated with the virus from these teat eruptions, fed her infant, which was similarly inoculated, from her own breast, and also with the milk from the cows, and yet the infant, though receiving into its system this immense concentration of the virus of alleged scarlatina, remained perfectly free from scarlet fever. In fact, it was not until scarlatina, which had previously been prevalent in the Neilston district, broke out among the people at Jaapston, where the dairy was, that any contaminating effects were discovered as being due to the distribution of that milk, and the unavoidable inference is, therefore, that the infective principle

of the scarlatina thus spread among the consumers of milk, came from a human and not from a bovine source.

This instance is not a solitary one in which a similar mistake has been made with regard to diphtheria, scarlatina, and typhoid fever, and it is most desirable that, in future, when endeavouring to trace certain diseases of man to animal sources, the medical investigators should be conjoined with skilled and experienced Veterinarians whose assistance will, in all likelihood, prevent such erroneous reports being issued. By adopting such a course needless alarm will be obviated, and serious injury to dairymen will not be inflicted.

In the carrying out of experiments, also, these should not be entrusted to one person, but be controlled by one or more experts. There are sources of fallacy in such experimentation, as is well known, and the positive results arrived at by one experimentalist are only too frequently negatived by those of others.

While making these suggestions, we would also impress upon veterinary surgeons whose practice is chiefly among cows, the desirability of closely observing those affections of the lacteal apparatus of these animals which are supposed to engender disease, other than cow-pox, in man. We believe it is only in this country that such suspicion exists, but it is none the less necessary that we should have proof that there is any ground whatever for the existence of this suspicion.

A MYSTERIOUS APPEARANCE OF FOOT AND MOUTH DISEASE.

On January 1st, foot-and-mouth disease was discovered in a dairy cow-shed at Barnsbury, London; this place contained nine cows, which were all slaughtered on the same day. No other cases occurred in the locality, and the source of the infection could not be traced, but it was supposed to have been conveyed from the Continent by means of straw used as litter. All movement of cattle out of the County of London was suspended for a fortnight, and this with, other necessary restrictions, caused, of course, much hardship and dissatisfaction. The action of the authorities in this instance, however, was prompt, and the result has been a complete success.

THE UTILITY OF MALLEIN.

The success of Mallein as an unfailing diagnostic aid in the detection of glanders, continues to be recorded in many parts of Europe and the United States of America. Everywhere it has been employed it has yielded such satisfactory results, that unanimity of opinion is general as to its great value to the veterinary surgeon in dealing with what is a very grave, and, only too often, a most intractable and insidious disorder when it appears among studs of horses.

At a recent meeting of the Central Veterinary Society of Paris, Nocard read a communication from Professor Galtier, of the Lyons Veterinary School, in which was the following statement:—"It cannot be too often repeated that injections of Mallein are destined to render the greatest service in the diagnosis of glanders, when it is occult or insufficiently revealed by clinical signs. The Mallein of the Institut Pasteur has been experimented with in my clinic, and it has always produced the development of a local accident, a general *malaise*, and a very marked hyperthermia in glandered animals; but it has never produced such results in non-affected horses, and it has enabled us to recognise the existence of glanders in cases which only showed enlarged glands; while it has permitted us to declare as not glandered those which were rather suspected, because they had an enlarged submaxillary gland, and subsequent experience has not yet invalidated our conclusions."

There can scarcely be a doubt that this agent, when skilfully employed, will lead to the eradication of glanders in congregations of horses where hitherto the disease has lurked for years, caused heavy loss, and baffled all the efforts of experts to suppress. Already it has achieved such a desirable consummation in several instances which have been published; and so confident is the German Government of its utility, that quite recently the Minister for War has given orders for its employment in doubtful cases of the disease among troop horses. The circular in which this mandate has been given, under date of September 13th last, and which is addressed to Generals Commanding Army Corps, contains brief directions for the employment of the Mallein.

At the meeting alluded to, Nocard also mentioned that an important Carriage Company in Paris had likewise such confidence in the results of Mallein, that the whole of their stud, amounting to about six thousand horses, were submitted to its influence; and they did not hesitate to sacrifice every one which the agent indicated as glandered—amounting to several hundreds. In the immense majority of cases, the autopsy revealed lesions which left no doubt as to the existence of the disease; some of the horses had only a small number of greyish, translucid miliary tubercles which were homogeneous throughout, but without any central softening, fibrous walls or inflammatory areola. The appearance of the tubercles and their small number might have given rise to doubts as to their specificity; but the veterinary surgeons of the Company, having always observed such tubercles alongside the classical ones in glandered horses, considered them as belonging to the disease. Nocard had no doubt that they constituted the first stage in the evolution of the glander tubercle, and he and Roux, of the Institut Pasteur, have several times obtained from them veritable cultures of the glanders bacillus. The result of the employment of this re-agent has been a perfect success, as glanders has been stamped out of the Company's stable, where it had prevailed for a long time, in spite of the most energetic sanitary measures.

At this same *séance*, M. Laquerrière described experiments with Mallein which he and another veterinary surgeon had instituted with the view of ascertaining the state of health of the horses of another Carriage Company in Paris. In the space of 15 days, of 141 animals 33 were slaughtered, and of these 10 had presented the clinical symptoms of glanders, while in the remaining 23 the disease existed in the latent state, and could only have been revealed by the Mallein. Subsequently, he had inoculated other 52 horses which presented absolutely no suspicious symptom of the disease, but which had been selected from amongst those in somewhat poor condition, with more or less capricious appetite and more or less unfit for work, but one of which had skin glanders and another nasal glanders. Of these 52 horses, 38 showed under the influence of the Mallein a rise in temperature of 2°, some of them even more. On the following day, 12 of these were killed at the knackers, and all exhibited unmistakable indications of glanders; the day afterwards,

the other 26 horses having re-acted to the Mallein were also destroyed, and, without exception, their autopsies gave the same result—lesions of pulmonary glanders.

A few days later 51 more horses were inoculated. Of this number 26 re-acted by showing a thermic elevation of 2° and more, 13 showed an elevation of 1° and 1° and some tenths; and 12 gave no re-action. Of the 20 which gave marked re-action, 12 were killed the day after, the 14 others being slaughtered in the second day subsequently.

In the 64 horses thus destroyed the characteristic lesions of glanders were found—tubercles, more or less old, beneath the pleuræ and in the pulmonary parenchyma, foci of lobular pneumonia, and pleural exudations; in some there was a thick layer of muco-pus in the trachea. Some days later two horses had to be slaughtered because of acute skin-glanders, and at their autopsy there were found old tubercles, but more especially recent ones in the lungs, and ulcers in the trachea, larynx and nasal cavities. These two horses had previously re-acted to the Mallein, but their temperature not having risen 2°, they were only classed for the time being as suspected. Still later, a horse affected with laminitis was killed as unfit for further service. It had been previously tested with Mallein, but there was no re-action; no lesions of glanders were discovered at its autopsy. So that at the time Laquerrière submitted this report, 102 of 141 horses had been destroyed, only 39 remaining.

We should not be astonished if some of the horse establishments in London, tested with Mallein in the same manner, yielded similar results.

Another interesting instance of the necessity for resorting to the employment of Mallein in searching for glanders, comes from Baltimore, U.S.A. A man who had been looking after horses in that city died of glanders, and Mr. Ward, F.R.C.V.S., was called in to examine them, but he could find nothing amiss. After a time it was elicited that the man's brother had a sick horse which had been under the treatment of the deceased for a long period. The animal was not apparently suffering from glanders, but as Mr. Ward suspected it, he had it impounded—being State Veterinarian—while he sent to the Bureau of Animal Industry at Washington for a supply of Mallein; with this he inoculated the horse, the temperature of which was then 100° two-fifths; on the next day it was 104°, and there was considerable general disturbance, with loss of appetite. Gradual recovery from this test took place, but the animal was killed after a few days, when all the lesions of chronic glanders were discovered—nodules in the lungs and other viscera, with ulceration high up on the nasal septum, and some old cicatrices.

It is to be hoped that abundant use will be made of this most valuable material in ridding this country of glanders. We have availed ourselves of every opportunity to insist upon its employment in all doubtful cases, and have no hesitation in recommending its being used on all the horses of a stud in which cases of the malady have appeared, in order to test their sanitary condition. This journal was the first in English-speaking countries to draw attention to it, soon after it was introduced to the notice of the medical world, and we once more refer to it as one of the most useful of the scientific discoveries in veterinary medicine which this century can boast of.

PYELO-NEPHRITIS IN CATTLE.

In the *Schweizter-Archiv* for 1892 (p. 2), Professor Hesse, director of the Berne Veterinary School, has a highly interesting paper on pyelo-nephritis in the bovine species, which enables the veterinary pathologist to form a good idea of this by no means infrequent complaint; for from 1888 to 1891 he had met with no fewer than thirteen cases, and there is no reason to think that the disease is much more common in Switzerland than elsewhere.

On the present occasion he describes only two cases, the others having been already carefully described in the same periodical. The first of the two cases was a cow, three and a-half years old, which had some difficulty in parturition on April 3rd, 1891, when the vaginal mucous membrane was somewhat lacerated; by means of an antiseptic treatment, however, the wounds soon healed, and the animal was apparently well and was giving a fair quantity of milk in eight days. On September 26th, 176 days after parturition, the cow showed signs of colic, and rumination and defecation were irregular; the urine was scanty, of red colour, and only a small quantity of milk was yielded. Ten days afterwards she was emaciated, the skin was unthrifty, and temperature 39·6° Cent., but the mucous membranes were normal. The abdomen was tympanitic, and pressure on the loins caused manifestations of severe pain. On exploring the genital organs, the mucous membrane of the vagina, clitoris, and urethra was observed to be very red, and there was a quantity of muco-pus. By rectal exploration the left ureter was discovered to be as large as the arm of an infant; the left kidney was thrice its natural size, and the peripheral tissue infiltrated: the right kidney was also enlarged. The urine was expelled in small quantity, was brown in colour, and very alkaline; it also contained much ammonia, albumen, red blood-corpuscles, ammonia magnesian phosphates, with bacteria and streptococci. As the cow became emaciated she was destroyed.

The autopsy confirmed the diagnosis of pyelo-nephritis. The cortical portion of the right kidney was brown in colour, and contained many small abscesses. The calices were dilated, and showed necrosed spots and white infiltration of the papillæ; they contained flakes of albumen and a dark-red fluid. The same alterations were noted in the left kidney.

With regard to the etiology of the disease, Hesse considers the pyelo-nephritis as consequent upon the wounds of the vagina, and in this way explains its occurrence after difficult parturition. A special microbe finds admission to the kidneys through the urinary passages. Hesse names this organism, which has been already described by Hœflich as the *Bacillus pyelo-nephriditis bovum*, the *Bacillus renalis bovis*.

A knowledge of the mechanism of infection indicates an efficacious prophylaxis.—*Revue Vétérinaire.*

ANEURYSM IN A FOX TERRIER.

Surgeon-Captain H. O. Trevor (Calicut, Malabar Coast) writes to the *British Medical Journal*. The following seems of interest. A fox-terrier bitch, eleven months old, in apparently good health with the exception of pain in the shoulder, was attacked with a husky cough, and after two days died suddenly from hænorrhage from the mouth. On dissection I found a fusiform aneurysm of the aorta, the size of an artichoke, which had burst through the lung into the pleural cavity. A few weeks previously the bitch had jumped out of a train in motion.

INOCULATION FOR BOVINE CONTAGIOUS PLEURO-PNEUMONIA.

Dr. Edington, the Colonial Bacteriologist of the Cape of Good Hope, has, during the latter half of November last, issued sufficient lung-sickness virus for the inoculation of some 1,800 head of cattle. The importance of this work cannot be over-estimated, says the Cape *Agricultural Journal*, for the disease is more than usually active this season and has manifested itself at many widely spread stations. The virus was had from Dr. Edington at 1s. per tube, each tube holding sufficient virus for five inoculations, injecting needles being supplied at 4s. 6d. each.

THE RELATIONS BETWEEN PNEUMONIA IN MAN AND PLEURO-PNEUMONIA IN THE HORSE.*

BY DR. KELSCH, PRINCIPAL PHYSICIAN AND PROFESSOR AT THE VAL-DE-GRACE HOSPITAL, PARIS.

HAVING made a study of the etiology of pneumonia in the army, our attention has been fixed on the relations this affection presents with influenza or pleuro-pneumonia.† Perhaps epidemiology, and especially the observations recorded in regiments of cavalry, may throw some light on these still disputed relations. The matter is certainly worth the trouble of examining, and if the facts which we give in this article are not isolated ones, and particularly if the deductions which it is permissible to draw from them are confirmed, there will result formal prophylactic indications which it would be imprudent to neglect with respect to men living in contact with horses.

It is known that in veterinary medicine influenza is a generic term applied to three distinct morbid conditions, the catarrhal influenza or "grippe," the intestinal influenza or typhus of horses, and the pectoral influenza or contagious pleuro-pneumonia. It is the latter *processus* which appears to be related in the closest manner to the pneumonia of man. Anatomically, it is a pulmonary phlegmatia which at one time terminates in multiple centres of necroses, and at another runs its course with the classical characters of our fibrinous pneumonia. According to Schütz, these two anatomical modalities represent two stages of the same disease, the cause of which, according to its degree of virulence, shall determine either a fibrinous or a necrotic inflammation.

This disease, which is enzoötic in large stables, and is transmissible by contact, clothing, forage, manure, healthy horses, and even their attendants, prevails as an epizoöty in army stables, and from time to time these epizoötics coincide with epidemics of pneumonia which more particularly affect those who are in contact with the sick horses.

The French and German military statistics in these later years are especially demonstrative of this coincidence ; indeed, the relation between the epidemic and epizoötic manifestations has appeared to be so close that some of our *confrères* have thought the two *processus* were identical. The following facts, selected from among those gleaned in making an analysis of these documents, are offered in support of the notion :—

In 1887, a regiment of Chasseurs at Vendôme had occurring at the same time an outbreak of pneumonia among the men and horses, which began in March and did not cease until July, when the troops go into camp (*Statistics Médicale de l'Armée pendant l'Année*, 1887). This coincidence did not fail to strike Surgeon-Major Buisson, who specially alluded to it in his annual report on the sanitary state of the regiment. But observations of this kind are rarely included in French reports. It is in those of Germany that we find the greatest number, and since 1884 each annual *compte rendu* furnishes some, of which we will briefly mention the most precise.

An epidemic of pneumonia which reigned from November 1884 to December 1885, at Wandsbuck, was remarked by Surgeon-Major Von Scheren as having some relation to an outbreak of pleuro-pneumonia that had been running its course from the commencement of October among the horses of the garrison. It began, in fact, in the second squadron, the horses in which also had the first cases of disease. It was surmised that these two episodes might well be closely related by some etiological connection, and this hypothesis became plausible when it was demonstrated that the fluids from the stable had access

* From the *Gazette Hebdomadaire de Médécine et de Chirurgie* and the *Revue Vétérinaire* for December, 1892.

† Under the designation of *equine pleuro-pneumonia*, Dr. Kelsch refers more particularly to the malady known as *infectious pneumonia, gangrenous pneumonia, stable pneumonia.*

to the well from which water was drawn for the troop. However, the bacteriological researches made at Altona by Pfuhl, and at Berlin by Gaffky, revealed nothing more than saprophyte micro-organisms.

A similar interpretation was put upon a small epidemy which the second portion of the second regiment of the Westphalian, stationed at Minden, experienced in the spring of 1884. Of ten cases, eight came from the seventh battery, the horses of which were suffering from influenza. Scarcely had the latter terminated in the early days of April, when the pneumonia appeared, and all the men who were attacked had been in contact with the sick horses. In support of the opinion as to the equine origin of the epidemy, Surgeon-Major Propping adduced the fact of the complete immunity of the eight battery, which did not have one sick horse, as well as the rarity of pneumonia among the other troops in the garrison at this time. In all the horses attacked there were noted the most characteristic signs of fibrinous pneumonia, and this was also remarked in the men by their high temperature, extreme debility, and tumefaction of the spleen.

Finally, the epidemy of pneumonia which appeared at Stettin in the winter of 1886–87, was considered by Surgeon-Major Schenck as strong testimony in favour of the position taken up by several of his colleagues. Towards the end of January, fifteen cases of pneumonia were declared all at once in one room of the eighth battery of the second regiment of Pomeranian Field Artillery and soon after other cases appeared among the artillerymen of other batteries and the men of tenth and eleventh of King Frederick-William the Fourth's Grenadiers, which occupied the other half of the artillery barracks. Then continually spreading, the epidemy extended to the various other corps beyond this barracks.

In the same interval pleuro-pneumonia prevailed among the artillery horses, and from January 2nd to the end of March it had attacked 208, of which three died. In the matter expectorated by one of the diseased animals, a microscopical examination discovered numerous diplococci surrounded by a bright capsule, absolutely identical with the pneumococcus of man. The epidemy manifested itself among the artillerymen nineteen days after the disease commenced in the stables, and the first men attacked had been employed in attending upon the sick horses. Surgeon-Major Schenck concluded that the prevailing malady was transmitted from the horses to the artillerymen and by these to the remainder of the garrison.

Another instance of this kind is furnished by what was observed at Munster in the winter of 1886–87, when of forty-seven cases of pneumonia twenty occurred among the Cuirassiers whose horses were at the same time affected with influenza.

Certainly we cannot but be impressed by the close correlation that seems to exist between these manifestations occurring at the same time between horses and men; but however imposing may be the epidemiological evidence in favour of the identity of the two diseases, definitive judgment must be reserved on this subject until experimental pathology and bacteriology have pronounced upon it. So far as the latter is concerned at present, the evidence is contradictory, but no doubt a solution of the problem will be arrived at.

If Lastig attributes the pneumonia of the horse to a bacillus that is not pathogenic for rabbits and mice, Peterlein, Perroncito and Brazzola are not far from identifying this pneumonia with that of men, as they have found in it encapsuled micro-organisms which could not be stained by Gram's method, and which, consequently, appears to be identical with the pneumococcus of Frænkel. But such an opinion does not agree with that of Schütz, who assigns as the proximate cause of equine pneumonia an oval bacterium, also provided with a capsule, but distinct from Frænkel's pneumococcus by its becoming stained by Gram's method, and by its special mode of development

in nutritive media. He has found this micro-organism in every one of the twenty-one cases he has examined, and his cultivations, when injected into the lungs of several horses, have developed a disease identical with the original malady. Quite recently, however, Hell has denied to this bacillus the signification attributed to it by Schütz, whose *technique*, according to Baumgarten, is not beyond reproach. Schütz, in fact, cultivated the parenchymatous juice of the diseased lungs on gelatine by pricking, and this method does not ensure the development of all the germs contained in the substance so sown, while it certainly excludes that of Frænkel's pneumococcus. But if the latter were really present in the matter employed, it should always be included in the inoculated culture, even if it had not multiplied.

As will be seen, if the epidemiological evidence is somewhat important, that furnished by bacteriology leaves us rather perplexed. Perhaps the question has advanced a step towards the solution that we prognosticate if we bear in mind the interesting fact that Dieudonné, aide-major in the infantry regiment of the King of Bavaria's Body Guard at Nuremberg, has recorded in the *Deutsche Militaræ rztliche Zeitschrift* for March, 1892. During an epizooty of equine pleuro-pneumonia among the horses of the King of Bavaria's First Regiment of Light Horse, this physician studied the nasal mucus of several animals at several stages of the disease. All the preparations, without exception, contained microbes absolutely indentical with the Frænkel-Weichelsel baum pneumococcus, usually arranged as diplococci, and exceptionally in chaplets of four to six elements, these micro-organisms were all provided with capsules, and could not be stained by Gram's method. The author adds to this information, in conformity with the observation of Peterlein, that according to the statistics he had made in this Light Horse regiment for the period from 1885 to 1891, the years in which most cases of pneumonia occurred among the men, were precisely those in which the epizooty prevailed among the horses.

The identity between the two affections is assuredly not demonstrated, but it nevertheless has in its favour, as has been shown, epidemiological and bacteriological evidence, which deserves to be taken into consideration. The question interests the hygiene of the army, and we call the attention of our colleagues attached to regiments of cavalry to it.

It is *a priori* admissible that two diseases so closely like one another as the croupal pneumonias of man and the horse should be produced by the same cause. The finding of Frænkel's pneumococcus in the epizooties at Stettin and Nuremberg, gives much probability to this opinion, though it still needs experimental proof—that is, the production in the horse of pneumonias identical with those it contracts spontaneously by the inoculation of that o man.

THE OIL OF TURPENTINE IN FISTULÆ.

A WRITER in the Austrian *Monatschrift für Thierheilkunde* speaks in high terms of the utility of Oil of Turpentine in the treatment of fistulous wounds. After dilating and cleaning out the fistulæ when necessary and possible, he injected the oil by means of a syringe into the cavity, repeating the injection every two or three days, a beneficial effect was soon noticeable.

IODIDE OF POTASSIUM OINTMENT.

RUE (in *Le Petit Journal de la Pharmacie*), recommends a glycerine solution of potassic iodide for the easy and rapid preparation of the ointment. One part of the salt to three of glycerine can be incorporated in any fat vehicle in the proportion desired. The solution so prepared can be kept indefinitely in amber coloured bottles.

IODOFORM GAUZE.

GAY (in the *Union Pharmaceutique*), recommends the following procedure for manufacturing iodoform gauze in small quantities:

Dissolve 5 grammes (75 grains) Elemi in a mixture consisting of
700 ccm. (fluid ounces 24) Ether.
500 ccm. (fluid ounces 17) Benzine.
10 ccm. (minims 160) Liquid Paraffin.

When the elemi is dissolved, add
50 grammes (drachms 12½) Iodoform.

This solution will serve for soaking 10 metres (11 yards) of gauze.

EPIDERMINE.

KOHN, in the (*Internationale klinische Rundschau*, No. 15, 1892), has experimented for the production of an ointment-base which would not, like the others thus far in use, prove serviceable in but one or another dermatological preparation, nor carry with it other objectionable features. His investigations resulted in "epidermine," which proves a good vehicle for a large number of drugs, fixes the incorporated substance well, does not irritate, does not decompose or become septic.

It is made as follows:

Pure bees-wax is worked into the consistence of liniment with water and glycerine until it becomes a milky, semi-fluid mass which, on exposure to the air, grows more consistent. When painted upon the skin it dries in a few minutes, to an adherent, elastic, delicate pellicle. This pellicle is easily removable by touching it with water.

When incorporating drugs with epidermine, care must be taken to prevent its forming layers. This is accomplished by triturating the prescribed drug with 10 per cent. of the glycerine of the epidermine-mass and gradually adding it thereto, while the whole mass is being stirred.

THE LONDON COUNTY COUNCIL AND FOOT-AND-MOUTH DISEASE.

THE Public Control Department of the London County Council have issued a memorandum to their veterinary inspectors instructing them what measures to adopt in case of any further outbreak of foot-and-mouth disease. The memorandum states that it is not the intention of the Council to compel the slaughter of infected animals, and further announces that as soon as favourable reports concerning an outbreak shall be received, the prohibition notices served upon cattle owners shall be withdrawn.

THE LONDON COUNTY COUNCIL AND GLANDERS.

THE following order has been published with the view of suppressing glanders in London. The order is a sensible one, though the symptoms of the disease might have been drawn up in better form, and more correctly described:—

GLANDERS OR FARCY ORDER.

The London County Council hereby gives Notice, that this Order requires every person having, or having had, in his possession, or under his charge, any animal affected with Glanders or Farcy to at once give notice thereof to the police.

Any such person failing to give notice is liable to a penalty of £20. On the police receiving notice the animal affected will be examined by one of the

Council's Veterinary Inspectors. Should it be proved to be glandered, all necessary steps for its slaughter and for the removal and destruction of the carcase will, at the owner's request, be taken at the expense of the Council.

No compensation will be paid either in respect of animals or carcases.

The Symptoms of Glanders include:—

1. Chronic cough.
2. Thin, unthrifty appearance, with rapid wasting.
3. Excessive staling.
4. Enlargement of the gland (or jug) under the jaws.
5. Slight sticky discharge from the nose.
6. An ulcerated patch on the membrane which divides the nostrils.

The Symptoms of Farcy include:

1. Thickened leg.
2. Corded veins.
3. Small lumps (or "buds") on the hide, which afterwards burst and discharge sticky matter.

Caution.—All who have anything to do with glandered or farcied animals should bear in mind the following facts:—

1. That disease can be communicated to man by discharge from the nostrils or other parts of diseased animal or carcase.
2. That the disease in man is almost always fatal.
3. That it is specially dangerous for persons with scratches or sores on their hands or face to handle diseased horses or carcases.
4. That by care and strict attention to cleanliness the danger of communication of the disease is avoidable.

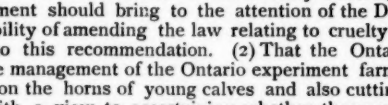
On January 20th, a deputation of horse owners in the metropolis waited upon Mr. H. Gardner, President of the Board of Agriculture, at the offices, St. James's Square, for the purpose of pointing out the hardships caused by the refusal of the London County Council to pay compensation in cases arising out of the Glanders Order of last year, under which animals were slaughtered. Mr. Gardner, in reply, said the deadly nature of the disease, its extent, the loss it brought about, and the danger it caused to human life placed great responsibility on the Board and all local authorities. The question was essentially a metropolitan one, and it would be of no use to give compensation powers to urban authorities unless the London County Council was willing to adopt these powers. It was a serious proposal to make compensation compulsory instead of permissive, and they must first be convinced that it would benefit the whole community instead of one particular district. He, however, fully recognised the importance of the question, and promised to keep it well in view on all occasions.

DISHORNING CATTLE.

THE Commission appointed by the Ontario Government to investigate the subject of dishorning cattle has made a report, from which the following is taken:—It seems to be established beyond reasonable doubt that dishorning, by effecting a change in the disposition of the animal, greatly increases its marketable value, besides enabling the owner to handle his stock with greater ease, economy, and safety. This increased value is made up in a variety of different ways. In the case of steers raised for the export trade the owner is enabled to feed loose in large stables and to adopt methods of saving manure, and, as the unruly disposition has been largely subdued, less food is required in bringing the animal to a prime condition. The stock can also be cared for

by fewer men. It was claimed by witnesses in the British trials, as well as before the Commission, that on the English market the buyers gave about 5 dollars per head more for dishorned cattle owing to the belief that they put on flesh better. Farmers and butchers also testified that they suffered serious loss by the cattle using their horns on each other. The same advantages in the care and management of dairy stock were claimed by practical dairymen after one or two years' experience, and experiments conducted by the agricultural stations amply justified their contention that, so far from being seriously interfered with, the milk supply was improved in every way as a result of the operation. Outside of any financial consideration, we have to consider the comfort of the animals themselves. The Commissioners were much impressed with the evidence that the removal of the horns prevents a good deal of suffering to the cattle. It was contended by the witnesses that the aggregate of suffering in the life of a dairy cow was much greater than the suffering involved in dishorning, and with this opinion the Commissioners are inclined to agree. A perusal of the evidence will show that the suffering occasioned by horns is neither rare nor trivial, and we commend to the consideration of the humane people this aspect of the question. All the evidence, in fact, goes to show that the possession of horns by cattle, in addition to causing a great and prolonged suffering, means a loss in the aggregate of hundreds of thousands of dollars to the farmers of this country. The Commission recommends as follows:—"(1) That the practice of dishorning be permitted where performed with reasonable skill, with proper appliances, and with due regard to the avoidance of unnecessary suffering, and that the Ontario Government should bring to the attention of the Dominion Government the desirability of amending the law relating to cruelty to animals so as to give effect to this recommendation. (2) That the Ontario Government should direct the management of the Ontario experiment farm to experiment with chemicals on the horns of young calves and also cutting out the young embryo horn with a view to ascertaining whether these methods are more desirable than sawing off the horns when they have attained their full growth." —*Mark Lane Express.*

METALLIC SPLINTS FOR DOGS.



THESE splints are cool, light, and strong, made of copper nickel-plated, so as to prevent oxidation. They can be bent to suit any limb. A slight roughness is left on the outside of the splints, by perforations, to prevent the bandage from slipping. They are invaluable when the parts are lacerated, as the perforations allow ventilation, and secretions are not confined and liable to be absorbed, but pass off through the numerous holes.

They are made in six sizes, by Messrs. Arnold & Sons, London.

PONY BREEDING IN MADRAS.

THE pony-breeding operations in the Madras Presidency, which have been confined to the two districts of Salem and Coimbatore, are to be extended to Kurnool and North Arcot. In Salem the system has shown much better results than in Coimbatore, but in the latter district the results are gradually improving. The question of the introductionof the system into the North

Arcot and Kurnool districts has been referred to Veterinary-Captain Burke, the Superintendent of the Civil Veterinary Department in the Presidency, for report after local inspection and consultation with district officers. North Arcot is the chief mart which supplies a large proportion of a very considerable number of poney used in the town of Madras, and the improvement of the breed would seem to be worth attempting. To encourage ponies breeding from Government stallions pony shows are to be held periodically, where owners will be able to judge of the superiority of ponies bred from Government stallions.

ALUMINIUM HORSE-SHOES.

In this Journal for January last, reference was made to trials of horse-shoes made of aluminium, which had been carried out in the Russian army with rather satisfactory results. More recently similar experiments have been conducted at the Berlin School of Military Horse-shoeing, but more especially with the object of ascertaining the practical application of this metal in a pure state in horse-shoeing, of bronze aluminium (6 to 10 per cent. of copper), and of copper aluminium (5 per cent. of aluminium). From the report issued, these experiments have allowed the following conclusions to be arrived at:—

1. Pure aluminium may be forged cold, but it is much more difficult to work than hot iron. The metal, which is naturally soft, becomes considerably harder by receiving numerous light blows with the hammer. When it is stamped or fullered as a shoe, it becomes very much deformed, so that there is a great loss of time in making the shoe properly. The duration of wear of shoes made of pure aluminium on a horse doing moderate work is about three weeks, and it is necessary from time to time to remove the bulging edges that form on branches of the shoe from wear. In consequence of the softness of the metal when compared with iron, the horse's foothold is more secure on asphalte and other slippery roads. Pure aluminium is about three times lighter than iron. An average-size iron horse-shoe weighs about 350 grammes, while one of pure aluminium compressed by hammering only weighs 210 grammes. The aluminium in bar costs 10 francs per kilogramme and 840 francs the quintal. The quantity necessary for two ordinary-sized shoes costs about 3 francs 75 cents, instead of 50 cents, when made of iron. The aluminium shoes, because of their lightness (250 grammes instead of 100 to 120 grammes), are preferable for race horses and for tips—a shoe then not weighing more than 50 to 80 grammes.

2. The bronze-aluminium is less ductile but harder than pure aluminium. When red-heated it cannot be forged, and if cold it often breaks under the hammer. The broken pieces and the old shoes cannot be utilised, as fusion renders the pure and the bronze aluminium hard and little ductile. If aluminium is added to the bronze, it can then be forged. The bronze aluminium in bar costs 655 francs the quintal.

3. The copper aluminium can be forged at a red heat, but with more difficulty than iron; it has nearly the same ductility as the latter.—*Giornale di Veterinaria Militare* and *Revue Vétérinaire.*

THE PASTEUR ANNIVERSARY.

The celebration of the seventieth birthday of M. Pasteur was made the occasion of a grand display in his honour in the great theatre of the New Sorbonne, Paris, on December 27th, the President of the Republic, all the chief officers of State, and representatives of science fron all parts of Europe being present. The demonstration was in every way a remarkable one, and testified to the great esteem in which this foremost *savant* of the age is held,

not only in his own country but throughout the civilized world. A gold medal, specially struck, was presented to him, as well as addresses from Universities and Medical and Veterinary Schools. This country sent worthy representatives, though the Royal College of Veterinary Surgeons unfortunately missed the opportunity. The Veterinary profession in England was not overlooked, however, by those who organised the ceremony, as an invitation was sent to Dr. Fleming, and a place reserved for him at the Sorbonne.

THE MANITOBA LEGISLATURE.

At the last general elections for the Manitoba Legislature, Mr. J. G. Rutherford, Veterinary Surgeon (graduate of the Ontario Veterinary College), was elected for Lakeside by a substantial majority. Mr. Rutherford is a native of Scotland, has studied veterinary medicine in Edinburgh, after learning farming, and, on arrival in Canada in 1875, entered the Ontario Agricultural School at Guelph, where he took high honours. He subsequently travelled much, and he served in the Saskatchewan rebellion, as veterinary surgeon to the artillery, was present at the engagements at Fish Creek and Batoche, receiving a medal. He has filled a large number of offices at Portage la Prairie, having been President of St. Andrew's Society for two years, President of the Island Park Association, Vice-President of the Portage and Lakeside Agricultural Society, and Vice-President of the Portage and Lakeside Farmers' Institute. He was mainly instrumental in securing the establishment of the Veterinary Association of Manitoba, of which he has been Secretary and Registrar since its inception. This association is of great importance in a new country like Manitoba.

A Winnipeg paper states that Mr. Rutherford is "in politics a Liberal and an independent supporter of the present Manitoba Government. He is a fluent, forcible, practical and humorous speaker, and will probably be frequently heard from in the House, where his knowledge of veterinary and agricultural questions will undoubtedly prove of much value."

Reviews.

A Course of Zootechny (*Cours de Zootechnie*). By M. Demarbaix. (Louvain: E. Fonteyn, 1892.)

Professor Demarbaix recently delivered a course of lectures on zootechny at the Agricultural Institute of the University of Louvain, and has thought fit to publish them, so as to benefit a far wider circle than that which was privileged to hear them in the lecture room. As the first portion of the general part has only as yet been issued, even though it contains nearly four hundred pages we are not in a position to give an opinion as to what the work will be as a whole; yet, judging from the instalment before us, it will be a complete treatise on the breeding and rearing of the domesticated animals from a scientific, no less than from a practical point of view, and possess an immense amount of interest for agriculturists, and still more, perhaps, for veterinary surgeons. The term "zootechny" is of recent formation, and really signifies "animal technology." It was first employed by Ampère in his *Essai sur la Philosophie des Sciences*; that illustrious scientist, in classifying the sciences and when treating of agriculture, separated the study of the animals from that of the vegetables which the agriculturist has to deal with, and gave the former the name which is now so much employed in France and Belgium to designate

the art of breeding and rearing such animals. It is extensively and carefully studied in the Agricultural and Veterinary Schools, and already several excellent works on it have been published in France—notably those of Sanson, Baudemont, Cornevin, and Baron, and now we have this of Demarbaix for Belgium. As might be imagined, it is an art that requires the aid of several sciences, among them being anatomy, physiology, zoology, hygiene, and æsthetics; and since these have been made available it is no longer empirical, but is founded on recognised laws. The great interest and value it possesses is well shown in this first portion, which embraces a host of subjects, every one of which should be familiar to the veterinary surgeon. These include species, race and variety, causes and limitations of varieties, geological history of ruminants and solipeds, heredity, morbid heredity, respective influences of the sexes, heredity limited by sex, direct and indirect atavism, consanguinity, selection, crossing, precocity, alimentation, and everything pertaining to food and feeding for growth, lactation, and labour. All these the author handles with the knowledge and skill of a master, and the illustrations he brings forward in support of the views he enunciates are apt and instructive. We are greatly pleased with the section of the work which Demarbaix has courteously submitted for our inspection, and we anticipate that, when completed, it will do credit to the ancient University of Louvain, which for many centuries has held such a prominent place among the learned institutions of Europe. As a first-class scientific and practical treatise on a subject of great importance, and which really constitutes a branch of veterinary science, it should be in the hands of every veterinary surgeon, and especially of those practitioners who are located in the country.

SHEEP FARMING: A TREATISE ON SHEEP, THEIR MANAGEMENT AND DISEASES. By W. SUTHERLAND. (Berkhamsted: William Cooper and Nephews, 1892.)

This is a handy little shilling manual, written by an experienced and skilful Scotch farmer, whose occupation has evidently been chiefly sheep farming. It deals with the principal breeds of sheep in this country, after treating of sheep-breeding; then of food, pastures and feeding, management of breeding ewes and lambs, hill shepherding, wool production, dipping, marking, and preparation of sheep for sale; while a considerable portion is devoted to the diseases of sheep. Mr. Sutherland gives very correct and simple descriptions of the majority of these diseases, and details the necessary treatment of them in a sensible manner, and such as any ordinary shepherd now-a-days should be able to comprehend. To sheep-owners and those who have the care of sheep this little book will be very useful.

THE CALENDAR OF THE ROYAL VETERINARY COLLEGE FOR 1892.

For the first time in its history, we believe, the senior teaching Veterinary School in this country has issued a calendar containing information concerning its incorporation, government, bye-laws, regulations, educational staff, teaching, terms of admission, and other matters which it is considered desirable should be made known. Intending students will find the examination papers set for matriculation in 1891 useful as a guide, while the syllabus of lectures gives an idea how the instruction is arranged and apportioned, as well as its extent.

THE JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The fourth part of the third volume of this journal just issued, though of interest to agriculturists, does not include anything of special importance to members of the veterinary profession, unless it be the papers on yew poisoning—a subject which has been a good deal discussed lately, and upon which contradictory opinions have been given. We had thought that the matter had been pretty well settled, and that it was generally believed that the yew tree

or some of its products were toxic for animals and men. So long ago as the days of Theophrastus, Pliny, Dioscorides and Galen it has been so considered, and the experiments and observations of Viborg, professor at the Copenhagen Veterinary School, first published in 1788 and 1792 in Germany, and in the *Sammlung von Abhandlungen für Thierarzt und Œkonomen* (Band II), at Copenhagen in 1797, were accepted as conclusive. No reference has been made to these by the four writers whose contributions appear in the Society's journal.

HOMŒOPATHY IN VETERINARY PRACTICE. BY J. SUTCLIFFE HURNDALL, M.R.C.V.S. (London: Messrs J. Bale and Son, Great Titchfield Street.

The Homœopathic League is issuing a series of tracts with the view of rendering the subject of homœpathy better understood and more popular. Forty-three have been issued, and the last of these is by a worthy member of the veterinary profession, who believes in and practises Hahnemann's system of medicine, evidently with success. Mr. Hurndall deals with the subject in a non-professional manner, as he addresses himself more particularly, we fancy, to the general public, and brings forward his arguments and proofs in favour of his medical belief in simple terms suitable to the comprehension of ordinary readers. Homœopathy has made very little progress among veterinary surgeons, and this the writer regretfully confesses; though why it should be so he declares he cannot answer satisfactorily, as he is certain from ten years' professional experience that the cause of this abstention does not lie in the Hahnemann system of cure. He is convinced, however, that the most powerful factor in operation against its adoption is ignorance, and that it is only those who have mastered its study who are competent to express an opinion upon it. We have never expressed an opinion hostile to homœopathy, and the veterinary profession in this country has, to its credit, refrained from anathematizing those who have adopted it, making no distinction between them and those who professed and practised allopathy. At the same time, we are ready to confess that there are some mysterious problems in the doctrine of homœopathy which are beyond our comprehension to solve, and which we cannot reconcile with physiological or pathological notions. But this is, no doubt, due to our not having mastered the subject. All the same, we are quite disposed to be as tolerant in this matter as we would counsel tolerance in religion; for when we find such shrewd and able men as Mr. Hurndall daily practising homœopathy, and pleading in its favour with all sincerity and honesty, it would be at leas unwarrantable and unkind to stigmatise them—as the sister profession has sometimes done—as silly fools, wilful impostors, or empirics. If anyone could convince sceptics of the soundness of the principles of his practice, and adduce evidence of their successful application, it would be Mr. Hurndall; and though this tract is not meant for his professional colleagues, yet they will be none the worse—probably they will be all the better—for reading it, and feel inclined to inquire more deeply into this question of homœopathy in veterinary practice.

THE AGRICULTURAL ANNUAL AND MARK LANE EXPRESS ALMANAC FOR 1893. (London: 150, Strand.)

This is a new venture, and one that promises to be successful, judging by its brilliant *début*. It contains much information of everyday use for agriculturists, as well as a number of special articles on various subjects of more or less interest to them, the production of well-known authorities in their particular line; among whom we find Sir J. B. Lawes, Bart., Dr. Fream, Dr. Fleming ("The Contagious Foot-rot of Sheep"), Prof. W. J. Malden, Gilbert Murray, T. G. Hewitt ("Inflammation of the Uterus after Lambing"), J. Craven, C. Kains-Jackson, and Professor Shelon, as well as the talented editor, Henry F. Moore. There is an excellent frontispiece likeness of the

President of the Board of Agriculture, the Right Hon. Herbert Gardner, M.P. We have no doubt that this almanac will be anxiously looked for towards the advent of succeeding years, if it keeps to the high standard it has adopted at its commencement, and knowing the ability and enterprise of its editor, there need be no apprehension on that score. At any rate, its modest price (sixpence), is surely the veriest minimum possible for such a quantity of agricultural literature of such high quality.

Army Veterinary Department.

Gazette, January 13th.

VOLUNTEER ARTILLERY. THE HIGHLAND. — Veterinary-Lieutenant D. Thomson resigns his commission. Hugh Ross, Gent., to be Veterinary-Lieutenant.

Gazette, January 20.

Veterinary-Captain R. F. Frost to be Veterinary-Major.

Obituary.

WE have to record the demise of Mr. H. Gelsthorpe, M.R.C.V.S., of Darlington, who graduated so recently as 1884.

The Italian Veterinary Press informs us of the death of Mr. F. Zoccoli, Professor of Anatomy at the Veterinary School of Milan. Before being appointed to that School he was attached to the Naples Veterinary School, where he produced an important work on the use of buffalo's flesh as food, which has done mueh to overcome the prejudice entertained against it by his countrymen.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Marked thus * passed with great credit.
" " † " " Very great credit.

AT a meeting of the Board of Examiners held in Edinburgh and Glasgow on and between December 15th and 23rd, the following gentlemen passed their final examination, and were admitted members of the Royal College of Veterinary Surgeons:—

DICK COLLEGE—

Mr. P. J. Dardis, Rathoan, Westmeath
" D. Davidson, Arbroath
" M. Fitzgibbon, Limerick
" E. Griffiths, Knighton, Radnorshire
" C. Hill, Darlington
" L. Knight, Clones, Monaghan
" J. A. Moore, Priestland, Antrim
" T. J. Nolan, Downpatrick
" J. Paton, Edinburgh
" *J. Park, Wigton, Cumberland
" H. Shaw, Ripon

DICK COLLECE (continued)—
Mr. G. W. Sturgess, Billesden, Leicester
„ S. F. H. Thorn, Norwich
„ W. Taylor, Wexford
„ J. Ker, Peebles

GLASGOW COLLEGE—
Mr. G. Stewart, Ballymena, Antrim
„ R. Aukenhead, Pollokshaw, Renfrew
„ J. E. Tooth, Colaba, Bombay
„ J. Douglas, Kirn, Argyleshire
„ G. Irvine, Glasgow
„ H. A. Hazeel, Dunoon
„ H. L. Chambers, Newtonards
„ J. McDougal, Helensburgh
„ J. E. Johnstone, Donoughmore, Co. Down
„ W. Galloway, Dunbarton
„ J. McKie, Paisley
„ J. K. Bruce, Meigle, Perth
„ J. D. Walker, Wishaw
„ T. A. Trotter, Maybole

NEW COLLEGE—
Mr. O. C. Bradly, Edinburgh
„ R. Eastwood, Preston
„ A. Ellison, Keighley, Yorkshire
„ J. A. Evans, Llandryssil, Cardigan
„ J. Farmer, Colinton, Edinburgh
„ F. Fraser, Keith
„ H. G. Hewitson, Carlisle
„ G. B. Holden, Edinburgh
„ T. H. Jowett, Bradford
„ F. B. Pearson, Chesterfield
„ H. Percival, Manchester

The following students passed their second examination:

DICK COLLEGE—

Mr. T. Batty
„ W. Brown
„ E. J. Bolton
„ A. Beckett
„ A Fletcher
„ R. Henderson
„ W. Hewitson
„ G. Lee

Mr. J Miller
„ P. Maher
„ W. McPherson
„ C. E. Neill
„ H. E. Porrell
„ H. O. Purves
„ J. D. Richardson
„ W. Robertson

GLASGOW COLLEGE—

Mr. W. McConnell
„ W. L. Webster
„ D. Evans
„ R. Margrave

Mr. A. Adams
„ J. H. Wilson
„ J. Steel
„ D. Houston

NEW COLLEGE—

Mr. W. Broomhead
„ S. Fenny
„ J. S. Gillespie
„ J. R. R. Hamilton
„ J. A. B. McGowan
„ J. Nutall

Mr. W. H. Phelan
„ J. J. Scott
„ J. S. Smith
„ F. G. Taylor
„ W. Wintle
„ J. H. Yates

The following students passed their first examination :—

DICK COLLEGE—

Mr. D. Bolton *
„ R. Barker
„ F. S. Clay
„ C. Clifford
„ A. G. Elder
„ A. Marston
„ D. C. Mytton
„ J. E. Madden
Mr. F. Richardson
„ T. W. Rudd
„ J. M. Watson
„ J. Willett
„ A. Weighton
„ T. Wilkinson
„ J. Younghusband

GLASGOW COLLEGE—

Mr. R. Armstrong
„ J. Laird
„ H. Ferrier
„ D. Wylie *
„ R. Griffin
Mr. H. Wooley
„ A. Spreull
„ L. H. Macqueen
„ G. Mayall *

NEW COLLEGE—

Mr. F. B. Byrne
„ H. Cameron
„ J. C. De Ville
„ G. W. Flynn
„ W. F. Hughes
„ R. Knight *
„ E. Morton
Mr. F. W. Morris
„ R. C. Moore †
„ F. Pickering
„ R. Rawlins
„ G. R. Simpson
„ G. Thornton
„ A. A. Wilson

R. RUTHERFORD, F.R.C.V.S.,
Secretary to the Board of Examiners.

Edinburgh, December 31st.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

THE usual monthly meeting of the Society was held on 5th January, at the Royal College of Veterinary Surgeons, Mr. W. Roots, the President, occupied the chair.

The British Institute of Preventive Medicine.

The SECRETARY stated that at the previous meeting he was directed by resolution—passed on the motion of Captain Raymond—to write to Dr. M. A. Ruffer, honorary secretary of the British Institute of Preventive Medicine, to ask, in reply to a letter from the latter as to supporting the Institute, "(1) If two more members of the veterinary profession can be added to the Council of the British Institute of Preventive Medicine, in view of the fact that the work of the Institute will be largely connected with the veterinary profession ; and (2) if facilities will be afforded for promulgating to our profession information of the work done." In accordance with this instruction the Secretary said he wrote to Dr. Ruffer, who replied that "in order to be able to answer the questions more fully he had sent his (Mr. Rogers') letter to Sir Joseph Lister, the President of the Institute, with whom he (Dr. Ruffer) would confer concerning the questions asked." The following letter was subsequently received :

"The British Institute of Preventive Medicine,
19, Iddesleigh Mansions, S.W.
December 7th, 1892.

My dear Sir,

I have shewn your letter to Sir Joseph Lister, and he has instructed me to say that it is probable that the Council of the Institute will be remodelled in a short time, and that when this takes place no doubt the

veterinary profession will be more fully represented. In the second place, as soon as the Institute is fairly started, we hope to publish every year an account of the work done, and a copy of this will be sent to all the subscribers as well as to the chief medical and veterinary papers both at home and abroad. Should you desire any other information I shall be glad to send it to you.

I am, etc.,

H. G. Rogers, Esq., (Signed) M. ARMAND RUFFER.
Hon. Sec., Central Veterinary Medical Society.

Mr. ROGERS explained that he had also received a communication from Mr. John Malcolm, Hon. Sec. of the National Veterinary Association (the text of this letter has not been forwarded.)

Mr. HUNTING: I propose that we write and say that we agree with the National Association, and we hope that all the other societies will endeavour to raise subscriptions, and finally pay them in through the Royal College of Veterinary Surgeons.

The SECRETARY: I believe some of the other societies have already subscribed—the Yorkshire Society, for instance.

Mr. HUNTING: They will all no doubt have received a letter similar to that which was addressed to ourselves.

The SECRETARY: The Yorkshire Society subscribed two months ago.

Mr. HUNTING: At a meeting of the Council of the Royal Veterinary College today this subject has been discussed, and the Council is willing to contribute to the Institute, but I cannot positively say yet what amount. The Council of the College will be willing to co-operate with this and kindred societies, so that one payment may be made on behalf of the profession at large, in lieu of half a dozen or more small contributions independently given.

The CHAIRMAN: Would not the Council of the Royal College of Veterinary Surgeons be disposed to head the list of subscriptions with a fairly proportionate amount?

Mr. HUNTING: They propose to do so, but think it better for each society to collect its own subscriptions, and then for the societies to pay them over to the Council of the College or to the National Association, so that the contributions may be handed over in one lump sum to the Council of the Institute.

The SECRETARY: If we knew the amount the Council of the College were disposed to give that might perhaps stimulate us.

Mr. HUNTING: The Council of the College are a little behind this Society in their action. They only to-day directed a similar letter to be sent to Dr. Ruffer to that which you forwarded last month.

The SECRETARY: There can be no two opinions about the Council of the College being the proper body to see that the interests of the veterinary profession are properly represented in connection with the British Institute of Preventive Medicine, and therefore I shall have much pleasure in seconding Mr. Hunting's motion.

The CHAIRMAN: The proposition is that a letter be sent to Mr. Malcolm, expressing agreement with the ideas conveyed in that gentleman's communication. And, I suppose, you would not reply to Dr. Ruffer's letter until we agree to some united course of action?

Mr. HUNTING: No.

The motion before the meeting was then put and passed unanimously.

New Fellows.

A ballot resulted in the unanimous election of the following gentlemen as Fellows of the Society:—Vet.-Capt. J. B. Savage, A.V.D., and G. C. O. Fowler, A.V.D.

"Scabies in the Horse."

By Vet.-Captain R. Butler.

Authors Consulted. *Neumann.*—Maladies parasitaires, 1888, and also the trans. by Fleming. *Percivall.*—Hippopathology, 1834. *Field.*—Posthumous Records, Veterinary, 1843. *Gamgee.*—Domestic Animals in Health and Disease, 1863. *Fleming.*—Sanitary Science, 1875. *Rutherford —Journal of Comparative Pathology.*—Sarcoptic Scabies in Horse, June, 1892. *McCall Anderson.*—Skin Diseases, 1868. *Edgar.*—Proceedings of Seven National Veterinary Associations. *Olver (H.)* Veterinary, 11th May, 1880.—Scabies. *Blenkinsop.*—Veterinarian, 1883. Two cases of Sarcopt. Scab.

Specimens Exhibited.

Microscopical.—Sarcoptes Scab. v. Equi. Psoroptes communis. v. Equi Symbiotes spathiferus. v. Equi. *Drawings.*—Shewing the differences between the three equine varieties.—Shewing the life-history of an Acarus. *Cast.*—Chronic Eczema. *Photographs.*—(1), Chronic Eczema, (2), (3), (4), (5), Sarcoptic Scabies—Indian skin disease.

Synopsis.

History, sketch of. Ancient knowledge of the disease. The Arabs the first to possess any accurate knowledge of the subject. The literature of and ideas with regard to the subject down to the present day.

Scabies and its synonyms used to denote the whole number of diseases produced by the sarcoptidæ.

Sarcoptidæ—their position in the animal kingdom—their general characteristics.

Affections caused by sarcoptidæ divided into two classes—according to the presence or absence of pruritus.

Mange in the horse—varieties—description and comparison of the parasites. The affections caused by each variety—modes of detecting the parasites.

The history of scabies, as affecting the lower animals, is linked with the same disease in man, and the earliest record of these carry us back far into the past. The first mention we can trace is found in the Bible (Leviticus xxii. 22), where, among the orders as to what animals were, and what were not fit for sacrifice we find "blind, broken or maimed, or having a wen, or scurvy or scabbed, ye shall not offer." From that time to the present we have a continuous chain of references to, and descriptions of the disease, until the present day. It is mentioned by Polybius (hist. book III. c. 87), as being prevalent amongst the animals of Hannibal's army during his invasion of Italy; and is referred to by both Virgil and Ovid as infesting the cattle of the agricultural Latins.

The first accurate ideas of the affection and its connection with parasites, come, however, from an Arab, 1-benzohr (1072-1161). He distinctly refers to its parasitic nature, *Oriuntur subcutis exterius pediculi parvunculi, qui cum excoriatur cutis, exeunt animalia viva tam parvuncula, quod vix possunt videri."*

In 1200, Fürstenburg found a book containing remedies for this disease, which was written by the Abbess of the convent of St. Hildegarde.

The first representation of the acarus was given in an imperfect manner by Hauptmann (1657), and thirty years later a more accurate figure was published by one Michael Etmuller.

Linnæus (1734) in his classification of the animal kingdom, wrongly supposed

the acarus to be identical with the cheese mite, and this error was corrected by De Geer (1778) and he, when pointing out the distinction between the two, gave an exact drawing of the parasite.

The name of Galès next occurs (1812) in this connection, and he wrote on the subject, was said to have experimentally produced the disease on himself and children, gave an elaborate design of the parasite—and also a public demonstration of the same. All this, however, was subsequently proved to be the outcome of a fertile imagination stimulated by the prospect of reward, and the drawing and specimen he exhibited were shown to be that of the cheese mite.

Francois Renucci (1834) a student at the St. Louis Hospital, Paris, gave a public demonstration of the actual parasite, and set all doubts at rest with regard to its identity.

In the horse the parasite was first observed by Gohier (1812). In more recent times the works of Bourgignon, Gerlach, Megnin and many others have resulted in our being in possession of complete and accurate knowledge of the various acari which have their habitat in or on the skin of the horse, and it is to these especially that attention is now directed.

Scabies and its synonyms are terms used to denote many of the affections produced by the family Sarcoptidæ, and in every language may be found a variety of names all of which indicate the most prominent symptom present: French, *rogne, gratelle, gale, psore;* Spanish, *rona, sarna;* German. *krätze;* Italian, *scabbiaraspa;* English, itch, mange, scab; Latin, *scabies* (*scabere*, to rub); Greek, *chora* (I rub).

Before proceeding further let us for a moment trace the descent of the particular form of parasites with which we are about to deal and fix their position in the animal kingdom.

The *Arthropoda* is an order of invertebrates, the position of which is between Vermes and Mollusca. This order is subdivided into Crustacea. *Arachnida*, Myriapoda and Insecta.

The Arachnida which at present interest us are again divided into ten orders, of which two only compries parasites of warm-blooded animals; these are the Linguatula and *Acaridæ*. The Acaridæ comprises eleven families, five of which are parasitic to the lower animals. Gamasidæ, Trombididæ, Ixodidæ, *Sarcoptidæ*, Demodectidæ.

With the family Sarcoptidæ it is that we are now concerned. These are the smallest of the Acaridæ and possess certain features in common.

(1) The body rounded, convex on the dorsum, having the thorax and abdomen in one, soft and white or red. (2) Skin, horny, arranged in fine symmetrical folds, and having disposed upon it hairs and spines. (3) The limbs, four pairs in the adult, one pair on each side of the base of the head. One pair on each side of the abdomen, and generally attached to each limb a hair, hook, or sucker. It is stated that Sarcoptidæ have five jointed limbs, but they are not always easily discernible.

Respiration cutaneous.—No organs of vision.

Sexes distinct.—The male being distinguished by the smaller size, the very prominent organ of copulation situate between the abdominal legs and sometimes by certain suckers placed at the posterior part of the abdomen which serve to fix the acarus during coition.

It must not be supposed that what we are accustomed to call acari, viz., such parasites as produce itch, constitute the whole class, there being other varieties which do not produce irritation, and this has led to the division, by Neumann, of diseases produced by acari into two classes, the irritative and the non-irritative.

We have now focussed down to the object in view, *i.e.*, those irritable affections of the horse's skin which are produced by acari and which we are

accustomed to speak of as mange or scabies. These affections are three in number:—

(1) Symbotic scabies, affecting the legs, produced by Symbiotes spathiferus v. equi.

(2) Psoroptic scabies, affecting the superior line of the body, principally base of neck, withers, &c., but which may rapidly become general.

(3) Sarcoptic scabies, generally starting from the withers, neck, or head, and gradually spreading over the whole body, produced by Sarcoptes scabei var. equi.

There are certain points of difference between each of the fore-mentioned parasites which are worthy of note, as being useful in their identification.

(1) Symbiotes, the male, has two flagellate appendages projecting from the posterior extremity. Has a rounded head like sarcoptes, but differs from that variety so greatly in shape that no difficulty is experienced in distinguishing between them.

(2) Psoroptes has a pointed head, and the male has no flagellate appendages.

Both these varieties have the hind legs projecting behind and beyond the body, and the males are provided with two symmetrically placed suckers, for the purpose of facilitating coition.

(3) Sarcoptes is smaller, rounder, has a blunt head, and the legs project but slightly from the body, the hind limbs being entirely hidden. There is more over a variable number of spines on the dorsum, which have their inclination backwards.

The life history of these parasites may be easily traced in the debris from any case of mange. (1) We have the egg which assumes a granular appearance and (2) the larva is next discernible within the shell which splits and (3) the larval hexapod escapes. At this period six limbs only are present, but changes of skin are undergone about the period of copulation, and our mature acarus with the fourth pair of legs is the result.

We now come to the effects produced by these various acari. First—symbiotic scabies—This is the least serious of the three, is the least contagious, the slowest in development and produces only local effects. It is found in the heels of coarsely bred and ill-groomed animals, is usually confined to the hind feet, and generally exists only in the bend of the pastern. It is possible for this disease to extend up the limb and even to attack the abdomen, but it is doubtful if in this country such severe cases are found, and they can only occur as the result of the grossest neglect. Symbiotes lives on the surface of the skin, is found in groups and only extends the radius of its habitat when increase in numbers demands a wider territory. It is exceedingly slow in its progression, and it is stated that only after the lapse of months or even years does it extend to the knee or hock. The lesions found in the skin are:—First, as a consequence of the irritation, the formation of bran-like epidermal scales which readily desquamate, and this is the ordinary condition found to exist when attention is drawn to the disease. The subsequent effects, as described in text books, read very like the condition known as "grease." "When the malady has persisted for a very long time and become inveterate, the skin is still more altered, being studded with papilliform prolongations surrounded by deep fissures and covered by a more or less friable horny layer, each of the vegetations corresponding to an enlarged papilla." ("Sanitary Science," Fleming—Vol. II. p. 414.) The detection of the parasite is easy, and with ordinary care certain, numbers being found amongst the debris which can be brushed off the skin. Experiments as to the transmissibility of symbiotic scabies to man and to other animals have invariably given negative results.

The next form, the psoroptic, or dermatodectic, is that which is probably the most familiar to us. It is usually found to exist on the base of the neck,

withers, back, and sometimes at the root of the tail, and as a rule is more or less local in its attack, rarely becoming generalised. The symptoms of this form are irritation, the formation of crusts, and a humid eczema. The irritation is so severe and marked as to always attract immediate attention and demand treatment, and possibly this may account for the frequency with which it is observed while the other forms may escape observation. The animal attacked seems to delight in friction of any sort, and will even inflict severe injury upon itself in seeking to alleviate the itching. Following on this we have an eczematous eruption from the punctures made by the parasites and an escape of serum which forms crusts, but the flow of liquid being continued the part affected remains in a characteristically moist condition. In the Continental authors we read of deep furrows being formed in the skin of the neck from the bottom of which a serous and often putrid discharge issues, but I doubt if in this country the disease is allowed to proceed unchecked for a sufficient time to produce such serious lesions. The part attacked is generally sharply circumscribed in area, but gradually increases its circumference in all directions; depilation ensues and we have a moist patch denuded of hair in the centre (or if the hair is not already rubbed off masses are detached on the slightest touch), at the edges of which the parasites are to be found in great numbers and may be readily detected with an ordinary lens. The irritation produced is so great as to cause subsequent thickening of the skin, particularly along the crest, and occasionally a chronic desquamation may follow, and this may be greatly exaggerated by the injudicious use of irritating applications. As regards the transmissibility of the disease among equines, this is readily brought about by actual contagion, by grooming appliances, and by attendants, and the affection may assume an enzootic form. To other animals and to man it is not communicated, although the parasite does set up a temporary irritation on the human skin. The extraordinary itching set up by psoroptes is supposed to be due to the particularly irritating fluid which they discharge into their punctures.

The Sarcoptic form to which we now come, and to which I would invite your special attention, is the most serious of the varieties. From having devoted some attention to the subject I am led to the belief that the disease although present amongst us, is not invariably recognised owing to certain difficulties in diagnosis.

Its chief characteristics as distinguished from the other varieties are, its rapidity of extension when once it has gained a footing, the ease and subtlety with which the contagion is transmitted, the difficulty of diagnosis, and its resistance to treatment. It is not difficult to account for these distinctions when we look to the character and habits of the Sarcoptes scabei. Immediately after coition, which takes place on the surface of the skin beneath the eczematous crusts formed, the impregnated female burrows beneath the epidermis and there forms small canals in which, at intervals, she deposits her eggs, and in which she subsequently dies. The eggs mature and the larvæ escape to the surface by means of small holes (air holes) which are to be found along the passage; the process is again and again repeated, and consequently it is easy to account, not only for the rapidity of extension, but the difficulties of diagnosis and treatment are also explained.

The symptoms of the disease are (1) an eczematous eruption (2) pruritis. These are the essential features, and to these may be added depilation, desquamation of the epidermis, and changes in the skin.

It will be noticed that I have placed "an eczematous eruption" first, and for this reason. Although it is usual to refer to itching as the prominent symptom of the disease, yet as far as personal experience serves, attention has first been directed to the eczematous condition, and not until this was well marked did the patient evince any noticeable irritation.

Attention having been called to this condition, a discrete eruption is found, usually situate on the withers, or head, but sometimes on the quarter, consisting of small beads of serous effusion, embracing several hairs; as the disease progresses, this scab with its included hairs becomes detached and leaves a small, circular, bald spot, at first slightly moist, but rapidly becoming dry. This eruption is easily distinguished from the large moist gradually increasing patch which is characteristic of the psoroptic form; but as regards its differentiation from non-parasitic eczema, I confess I am unable to give any macroscopical distinctions, and can only distinguish by concomitant symptoms and the microscope.

A form of eczema mentioned by Neumann, and which I believe I have met with in one instance (eczema dartreux) so exactly simulates the disease in naked-eye appearance as to be indistinguishable, and as this form is also accompanied by considerable irritation, the difficulty of diagnosis is increased. Careful observation of the tendency to spread or remain localized, the history of the case, and above all, repeated microscopical examinations are the points to bear in mind when considering this eruption.

Itching. This symptom we find placed first in all text books, and it may be that when exposed to the weather during campaigns, that it is the most prominent feature of the disease; but in stables, amongst animals which are under good hygienic conditions, it does not appear to be very marked at the outset of the disease, nor indeed have I seen any great irritability in cases of considerable standing. This it is which leads me to think that there may be some cases of chronic skin affections, which are now included under the convenient term "eczema," but which after careful investigation may prove to be scabies; as a proof I may state that during the past year two cases of "chronic eczema" in my personal experience have been shown to be due to the invasion of this parasite. Moreover, Fleming ("Sanit. Science") observes, after giving a graphic description of the pruritus, "it is not a matter for doubt that horses when stabled, and well or even moderately well fed, will resist the irritation without exhibiting much disturbance in health."

The disease having fairly established itself spreads with rapidity, and on clipping an affected animal it is noticeable always that a far greater surface than at first supposed is invaded. The epithelium is now shed in great quantities, and subsequently the hair which replaced that already destroyed is of a much darker colour.

As regards the wrinkled condition upon which a certain amount of stress has been laid as a symptom, I may observe that it is a common concomitant of all longstanding irritations of the skin in certain situations. It may be seen in the Indian skin disease, in chronic eczema and after the application of medicinal irritants. Its common situation is the neck but it may sometimes be observed on the shoulders, elbow, ribs, and stifle.

The transmission of the disease to man is of some importance, as it undoubtedly takes place. The tendency in man, however, is towards recovery and not towards extension, and if not medically treated the equine sarcopt perishes in the human skin within six weeks of its first attack (Neumann). Moreover, the transmission of the disease to man is not easily accomplished as is proved by there being no increase of cases of itch among attendants whilst their equine charges are suffering from the disease. This conclusion I am able to arrive at through the courtesy of a medical officer who furnished me with the numbers of itch patients for twelve months during which the horses were suffering from the disease. As regards the lower animals it is recorded that the disease has been transmitted to cows experimentally but to no other domesticated animal.

Methods for Detection of Parasites.—With the symbiotic and psoroptic varieties in a fresh state, no difficulty is experienced. An ordinary lens will

give sufficient enlargement to see the parasite distinctly, and with hair plucked from a case of psoroptic manage, a careful naked eye examination will suffice to see the movement of the hairs as they are disturbed by the passage of this active variety. With ancient or dried specimens a soaking in dilute liq. potassæ will be required, and subsequent examination under the microscope. In the sarcoptic form more care and patience is necessary. I have found the best plan to take all scrapings and groomings and soak in liq. potassæ (dil.), but various other plans are recommended, such as tying the suspected scabs on the arm, when the parasite if present will attack the skin within 12 hours and may then be easily secured with a needle. Another method is to place the suspected crusts on black paper in a warm atmosphere and subsequently examine with a lens. Also I have tried the cutting of sections and removal of the epithelium from a piece of suspected skin by maceration, and subsequently examining by direct light; but I consider none of these methods so generally useful for diagnostic purposes as the potash treatment, which if combined with patient examination will give most satisfactory results.

The Discussion.

Mr. A. PRUDAMES: With respect to the specimen of skin from India, I should like to ask Mr. Butler whether he is aware that it has ever been treated or whether it is simply in its natural condition. The corrugation of the skin is so marked that it almost leads one to believe the skin has been treated with some strong astringent.

Mr. BUTLER: I may say at once in answer to this question that I have no knowledge of the skin being treated, but, as a matter of fact, this wrinkled condition of the skin is a common one in India. There is no doubt that wrinkling can be produced by long continued irritation of skin in particular regions, namely, on the side of the neck, or point of the elbow, or over the ribs, it may be produced by any strong and long-continued irritant.

Dr. MACDONALD said that while in Queensland he had had a great deal of experience of an epidemic of sarcoptic mange which broke out there in 1887, and which was communicable to man. It originated in the mountains at a silver mine, among some mules which had been imported, and it spread very rapidly in the district. The disease became a veritable scourge over the whole country. Within a single year it spread north, south, east and west. In eighteen months it reached New South Wales, and ultimately became so serious that the Government interposed to prevent its further ravages. The specimens which had been submitted that evening were very good, and represented, in his opinion, clearly what the disease looked like; especially the specimen of wrinkled skin which had been exhibited. They might really call the wrinkles wheales; the skins sometimes showed furrows of half-an-inch depth. He should certainly say that itch had pronounced and very distinct symptoms. The first symptom was that an infected animal would rub its tail against any obstacle, even against a barbed fence. When a horse did that he thought they must arrive at the conclusion that it was very much irritated. Then the disease travelled down the neck, along the back and centred in the root of the tail, whence it was very difficult to drive the disease. He had noticed, too, that under the thighs was a spot where the disease frequently manifested itself. As to the communicability of the disease to man, that was undoubted. He had the disease himself very severely, and it took him two years' hard work to get rid of it. It started in the place where they would expect it to originate from riding on a saddle. He had known many men affected with the disease. He knew of a case where a man put on another's clothes, and got the disease by that means. He noticed that while some men were easily cured, others could only free themselves after great difficulty. When in Queensland, he had a large

stud of horses, two of which he had in training for a steeplechase. He kept these isolated from the other horses, and yet they contracted the disease. The great thing in the way of treatment was to go on with the treatment a sufficiently long time, and even after they noticed the hair growing and thought the horse was well. Unless they did this the animal would go back, and the disease would return when they believed that they had got the animal completely cured. Spots, which they might call lavender spots, are characteristic of the disease in its first stages. Then the horse severely affected showed those wheales and its lost hair from right along its neck, withers, and forepart, until the superficial surface of the skin resembled that of an elephant more than of any other animal.

Vet.-Capt. BUTLER stated that no doubt the outbreak to which Dr. Macdonald had referred, was one of sarcoptic mange; the parasite was discovered, and its discovery was corroborated, no doubt, by every able observer. Dr. Macdonald said the disease rapidly extended. That rapid extension was one of the characteristics of the disease. Itch was, according to Dr. Macdonald, a very prominent symptom. In any useful description of sarcoptic mange, they ought to have two sets of symptoms set forth, one applicable to horses not stabled and groomed, and the other applicable to horses in stables, well groomed and well cared for. In the latter horses, itch was not so prominent as in animals kept in the open. He (Vet.-Capt. Butler) gathered from the remarks of Dr. Macdonald that the horses to which he alluded as rubbing themselves against barbed fences, were in the open. It was surprising to find that it took Dr. Macdonald two years to get rid of the equine sarcopt when, according to Neumann, it only ran a course of six weeks, while the tendency was towards recovery. The disease was focussed, and became gradually less in its effect, and at the end of six weeks it was said the effect of the parasite disappeared altogether. Of course he (Vet.-Capt. Butler) could not offer any data on his own authority, and could merely quote the statements of men regarded as keen and careful observers. It was possible, more than possible, that under conditions where sarcoptic scabies existed in a horse, the same disease might exist in a man. the parasite in the latter case being the one proper to man. This parasite differed very little in its general characteristics from the sarcoptidæ of a horse, save that it was slightly smaller. As regarded treatment, they were told that it was necessary to continue it a long time, and here he thought they could reconcile scientific observation with practical work. It had been shown by several observers—continental observers, of course—that it required a varying period of three days to a fortnight for the acarus to be fully developed, that was from the egg to the mature sarcopt. If they struck an average, they got a fresh generation of acaridæ every ten days.

Mr. HUNTING said he desired to thank the essayist for his paper, because since he had heard it read, he had certainly a clearer notion of mange in a horse than he had before. Personally, he had never traced any disease of the horse to the symbiotic parasite, and he was not at all clear, from what the essayist said, that he (Vet.-Capt. Butler) was sure the parasite caused any definite disease. Practically, we have now to meet two forms of parasite: the sarcoptic and the one that travelled on the skin; and they had been very clearly shown the difference between the two. He, himself, made a very rough distinction under the microscope. If he found one with spines on the back he concluded it was a burrowing parasite, and if he discovered one with no spines on the back, he concluded that that parasite lived on the surface of the skin. As to the symptoms it was extremely difficult, he said, when any skin disease had lasted for any length of time, or after it had been treated, to make out what it was without microscopic examination. Hence they should use a microscope in diagnosing their cases, and even a microscope was of little or no

use after they had dressed the animal over with dressings. Nothing was more puzzling when a veterinary surgeon was called in to an outbreak of disease that had fogged the owner for some weeks, than to find that the owner had religiously treated the animals with some dressing that killed all the creatures on the surface—nothing was more puzzling in these circumstances than to diagnose aright the nature of the disease, unless one was sufficiently skilled in the use of the microscope to be able to tell eggs when he saw them. That he (Mr. Hunting) certainly could not do. As to the treatment of this disease there were a few points he should like to be informed about. He always thought in a case of mange (he used the word "mange" in its generic sense, and alluded to the disease due to parasites simply running about the surface of the skin), they made a better job of it by first washing their animal with soap and water than by adopting treatment at once. While in the summer time it was comparatively easy to cure mange, in the winter in studs of animals it was exceedingly difficult. To treat any animal properly it was requested to abandon clothing, and this they could not do in the winter. If they did, and the weather was like that they were then experiencing, some of the animals would doubtless die as the result of cold, want of hair, and because of irritation. He remembered that some time ago there was an interesting trial when very diverse evideuce was given, ten gentlemen swearing one thing and ten another. Were there not gentlemen present who had seen horses infected with mange which would die let them do their level best to cure them? Had they not seen horses with mange and treated them as well as horses could be treated, which nevertheless lost flesh to such an extent that they were glad to get rid of them as "cured" even when they were not quite sure that they were cured. If they happened to be in their infirmaries, they were glad to lose sight of them before they went to the knackers' yard. He submitted that it was quite time this disease was included in the Contagious Diseases (Animals) Act. The last three winters in London had been disagreeable winters, severe winters, characterised by prolonged snow, frost and cold. Each winter had, in his experience, been accompanied by a continual increase in mange in horses. Indeed, during the last three winters he had never seen so much mange prevail among horses in any period during the time he had been in London. The very fact that these cases might last for weeks through being half treated, showed how dangerous it was to have a contagious disease like this go on unchecked. It would not, perhaps, matter so much to the owner of one horse, but to cabmasters and large contractors the mange became a very grave matter indeed when an outbreak occurred among their studs. Horses thus affected should be prevented from working in the street or, at all events, they should be treated as sheep were when scabies occurred among them. Vet-Capt. Butler had omitted to mention the outbreak of sarcoptic mange which occurred in Shetland, as to which the government issued an order some time ago, and he (Mr. Hunting) remembered that a number of Shetland ponies had to be shot before the disease could be stamped out in the Islands.

Mr. J. S. HURNDALL thanked Veterinary-Captain Butler for bringing before the Society so able a paper and one that offered so much scope for thought and discussion. With regard to irritation, he believed that the views of Veterinary-Captain Butler were quite right, but it certainly did not occur to those of them who were in private practice to observe sarcoptic mange or any other sort of mange until coachman or groom drew their attention to the fact, that he had observed the horse rubbing itself. Of course, in the army, those who were in charge of the horses were trained to be on the watch for any unhealthy appearance, whether in the skin or elsewhere, but the ordinary coachman or groom could not be compared with the horse-keepers of the army. Hence, veterinary surgeons in private practice were apt to form the conclusion that irritation was one of the first symptoms that came under their

notice, because they never had a case brought under their eyes, as a rule, until the horse showed signs of irritation. He was always under the impression that the symptom of the wrinkling of the neck was indicative of sarcoptic mange; but Veterinary-Captain Butler had shewn them by the evidence he had brought under their eyes that night, that there were circumstances under which the neck might be wrinkled without sarcoptic scabies being present. Mr. Hurndall went on to say that he had had considerable experience, relatively to the extent of his practice, of sarcoptic mange and of its communicableness to man. Certainly in three instances he had known men attending horses suffering from mange to be troubled with an excessive amount of irritation about their arms and the backs of their hands, but after using some dressing employed in the case of horses, and allowing it to remain a few hours, they had speedily got rid of the irritation. He was surprised to hear Dr. Macdonald say it took so long a time to eradicate the mange from the human system. The disease was one which should certainly be included in the Contagious Diseases (Animals) Act. With regard to remedies, Mr. Hurndall said he was wont to use a preparation of corrosive sublimate, and he had never known it to fail. In an instance where he believed he had sarcoptic mange to deal with, he adopted the process for discovery which Veterinary-Captain Butler had explained. He scraped off a portion of scurf and scabs from the horse's skin before he put any dressing upon the skin, and then he submitted the portion to a weak solution of liquor potassæ. Next he placed it under the miroscope, and then detected, he thought, the unmistakable presence of the parasite.

After a few words from Mr. HEDLEY, as to the formation of the parasite,

Professor MACQUEEN remarked that he had first to thank Veterinary-Captain Butler for his excellent paper, and, secondly, to say that he differed from that gentleman in certain of his findings. With regard to the frequency of different forms of mange, he maintained that mange was a very common disease in all our domestic animals, much more common than most people were willing to admit, and this was largely owing to no endeavour being made on the part of individuals to find the parasite. If, however, they entered any cowshed or piggery and made a scraping, they would discover an enormous number of parasites on every animal. He believed that these parasites were responsible for a great many eczematous skin eruptions. As to symbiotic mange, it was not at all common, and he did not agree with Veterinary-Captain Butler that the disease was limited to the horse's heels. He (Professor Macqueen) had found it extend as high as the hock, indeed he had known the parasite infest the mane. He did not, however, say it was common in the mane. Mr. Hunting had pointed out that, despite all treatment, death occurred in the case of well-established common mange. In the case to which that gentleman referred, the dispute arose largely as to a certain item of treatment; as to whether the disease was well established or not before the veterinary surgeon was called in. He (Professor Macqueen) maintained that if the common mange was seen early—as it should be, but was not often seen—then the veterinarian ought not to experience any difficulty in cutting short the irritation, but if the disease was well-established then a long time would be necessary for treatment. Reverting to Vet.-Capt. Butler's remarks, Professor Macqueen held that sarcoptic mange was not so common as ordinary mange or psoroptic mange. But he contended that it was not a disease which spread fast in a stable—he did not refer to the spread from animal to animal, but to the fact that the patches in one particular animal did not spread quickly in a stable. Of all mange this was the most intractable, the most difficult to diagnose; and with regard to the formation of sarcoptic mange he differed from the views expressed by Vet.-Capt. Butler, and he maintained that the first indication of mange in a horse

was itch, and that this preceded eczematic eruption. What caused the eczematic eruption was the presence of the parasite. Was it possible for a horse to suffer simultaneously from two affections—eczema and sarcoptic mange? He had found it so. He should have liked a little more information from Vet.-Capt. Butler concerning the condition which the latter maintained as "eczema." Eczema in the lower animals was a disease which required a little elucidation. He was not at all in agreement with many as to to the frequency of eczema iu the horse. What was really meant by eczema in regard to the horse? In speaking of forms of sarcoptic mange he thought it was necessary one should make one's self clear as to definitions. As to treatment, Professor Macqueen believed that every veterinary surgeon had his own peculiar remedy. He did not think that there was any real specific. He believed first of all in having the animal thoroughly washed with plain soap and water and when dried, washing the skin not in one patch but all over. Every part—inside and outside the legs—and all the body should be covered by the mange dressing; and for this purpose he found no better remedy than a solution of Jeyes' fluid —twenty ounces to three gallons of water. That was to be renewed every three or four days. In cases of symbiotic mange he found it was necessary to employ an ointment, and for this purpose they must have recourse to something of the mercurial order. In that he agreed with Mr. Hurndall.

Vet.-Capt. BUTLER, replying to observations made in the course of the discussion, said the symbiotic parasite being practically an immovable parasite, was only transferred from one part of a horse to another by the direct action of the horse itself. The *acaridæ* when found in an unusual part were placed there by the animal itself. If found on the neck, for instance, they would be transferred by the horse scratching its neck with its hind foot. What more likely than that the parasite should then be detached from the heel and hang on where it found itself landed. Mr. Hunting had alluded to the difficulty of diagnosing skin diseases without the aid of a microscope, and had avowed his failure to recognise eggs even with the aid of a microscope. That gentleman hardly did himself justice, inasmuch as the eggs, when viewed through a microscope, stood out in a peculiarly prominent way, and, if it were desired to make them yet more prominent, all that was needed was to stain the matter to be observed with any ordinary analine dye. Logwood was what he (Vet.-Capt. Butler) employed, so as to make the parasite and its eggs, which remained unstrained, stand out clearly. It was, Vet.-Capt. Butler admitted, sometimes difficult to diagnose one form of skin disease from another, and upon the specimen of skin from a mule's neck which he exhibited he had spent fifteen hours in trying to discover the real nature of the disease. After microscopical examination, repeated over and over again, he found the case resembled symbiotic mange so closely that, being called upon to diagnose and treat the case, he did not feel happy at all with regard to what he should call the disease. Ultimately he arrived at the conclusion that what he saw was not the form of disease called symbiotic scabies, but was the disease mentioned by Neumann, and called by him "eczema dartreux." He was at one with Mr. Hunting that it was highly necessary and desirable that these diseases should be scheduled in the orders issued under the Contagious Diseases (Animals) Act. Indeed one of the objects of his paper was to elicit an expression of opinion as to whether or not these diseases should be placed within the power of departmental interference. As to the outbreak of sarcoptic mange in Shetland, he learnt from Prof. Walley that the action of the local authorities there had been evoked in stamping out the disease. Prof. Macqueen was probably correct in his remark that mange was much more common than was generally supposed, and especially the sarcoptic form of it. This, he thought, was due to want of correct diagnoses. In the case of sarcoptic mange, there was a certain difficulty of diagnosis and of differentiation from other

forms of disease. With respect to the assertion of Prof. Macqueen that the presence of parasites could be frequently, commonly, detected in healthy animals in a cowshed or piggery, Vet.-Capt. Butler said he had, so far as his experience of healthy army horses was concerned, failed to find anything of the kind, though he had examined with this view carefully and minutely. As to itch being the first symptom of the disease, Vet.-Capt. Butler asked what caused the itching. The parasite, they might say; he did not believe this. The parasite itself was not felt. If they put an acarus on their arm, it would wander about there twelve hours before they felt it, and although it might burrow a certain depth they would not feel it until it penetrated the epidermis. With respect to the required definition of "eczema," he used the word in his paper as a convenient term under which they might place diseases that they were unable to diagnose. He regarded eczema as a symptom of something caused by a something. Hence he had spoken in his paper of the eczema of scabies—eczema produced by a parasite. They had in the specimen of a mule's skin which he exhibited, an eczema, the cause of which he was unable to locate. It was chronic eczema, as it was called in this country. Concerning treatment, they were all agreed that it was first desirable to clean the animal all over thoroughly and then dress him similarly. Carbonate of potash and soda diluted would enable them to get rid of the oily, fatty excretions of the skin, and they would thus have a better surface to work upon afterwards.

Professor MACQUEEN, in alluding to a remark by Vet.-Capt. Butler, said than a dilution of strong black twist tobacco he knew nothing that would so quickly recover a horse from the toxic action of strychnine medicinally administered.

On the motion of Mr. J. MULVEY, seconded by Mr. HEDLEY, a cordial and unanimous vote of thanks was accorded to Vet.-Capt. Butler for his interesting and instructive paper.

Vet.-Capt. BUTLER, in acknowledging the compliment paid him, expressed a hope that on some future occasion he should be able to prepare a paper on another subject, and have the privilege of reading it before that Society. (Applause.)

The CHAIRMAN moved, and Mr. MULVEY seconded, a resolution which was unanimously carried, requesting the Board of Agriculture to include mange in their schedule of infectious diseases issued under the Contagious Diseases (Animals) Act.

The proceedings then terminated.

H. G. ROGERS, *Hon. Sec.*

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

(Continued from Page 66.)

Professor HUNTER said of course they all knew that he was not a practical man, as far as being able to recognise disease in an animal before or after death, but so far as he had been able to judge from specimens, taking for granted that the history of these specimens up to the time he saw them was correct, he might tell them that he had no doubt as to a very profound difference as to the appearance of a lung affected by pleuro-pneumonia and one attacked with broncho-pneumonia. He remembered distinctly on the first occasion that Professor Williams showed him a lung affected with disease, he considered that if it was not pleuro-pneumonia it was something very like it. On seeing it a little more closely, however, he found with the little experience he had that it had not the same look. On having the specimen hardened and on examining the section, he expressed the opinion at once that the lung looked exactly as if the animal had had an affection which was common in the human

subject, especially among children. They become choked and have great difficulty in breathing. The lung of these children is like that of an animal which is found severely affected by this broncho-pneumonia. They had the air cells blocked with bulky bodies, and they were more or less suffering from a state of chronic inflammation. He did not deny that there might be pleurisy in some of those cases. They might call it pleuro-pneumonia, but the term pleuro-pneumonia contagiosa was indicative of an entirely different disease. He considered that a non-professional man who had placed before him two typical specimens of pleuro-pneumonia and broncho-pneumonia side by side—anyone who had not committed himself to an opinion—would say at once that they were two perfectly different things, and although they might not be able to describe them in technical language they would be quite convinced that they represented two different states of disease. He did not say any man had tried to make distinctions which did not exist, but there was just a shade of possibility that, as in everything else, they sometimes had things placed before them that they did not want to see. It was quite possible, having some object in view other than pure scientific research, not to say political or otherwise, that when specimens were placed before a man in those conditions he said public things that he would not otherwise say, and things appeared to his eyes as they would not otherwise do. They could conceive such matters affecting them as being not altogether above human motives. The pure scientist was an imaginary character, he could not exist. They were all more or less connected with business or commerce, and it required a very considerable amount of dissociation from commercial and political associations for them to give a decided impartial opinion on almost anything; and in a case like this where there were so many interests at stake, and where there were so many officials connected with the investigation, it came to be really a very difficult matter to try and say who were right and who were wrong. But in this matter so far as the mere distinction about the character and shape of the lungs was affected he thought there could be no difference of opinion whatever as to a typical case of pleuro-pneumonia contagiosa and broncho-pneumonia. There could be no possible way of getting out of it that these were two entirely different things, leaving it to those who had followed up the previous history of the case—the symptoms exhibited before death—to clear away the difficulties which encumbered the case. To the common run of veterinary surgeons in a common practice the similarity might be so great that it was excusable for a man to make a mistake, but on the other hand he did not think there was any reason for a man who was an Inspector appointed by the Government, upon whom the responsibility of many thousands of pounds rested—not to talk of the scientific value of the whole matter and the commercial side of the question—he did not think there was any excuse for a man with that responsibility resting upon him to say that a *bona-fide* case of broncho-pneumonia was pleuro-pneumonia. He considered it was a culpable error, and the sooner the matter was overhauled by totally independent examiners the better it would be not only for this country and other countries, but the better for the value of scientific opinion. It was said that doctors differ, but it was a remarkable thing that when scientific experts came into court they were found differing so much as they did. The outside public looked upon them as a set of quibblers and shufflers, addicted to private quarrelling. He thought it was a great pity that scientists should be found descending to little personalities in matters of so great interest.

Mr. RUTHERFORD said Professor Hunter's closing remarks urge him to suggest that both Principal Williams and he should be asked to withdraw that portion of their statements where they would impute a political motive to the action of the Board of Agriculture.

Principal WILLIAMS: I do nothing of the sort. I don't withdraw one single word.

Mr. RUTHERFORD: I think as a body of scientific gentlemen I would like to utter my protest.

Principal WILLIAMS: That is my independent opinion, and I don't intend to withdraw one single word.

Mr. RUTHERFORD: I think as scientists we are stronger in approaching this question from a purely scientific point of view, instead of from political or personal motives.

Principal WILLIAMS: I have no reason to withdraw one word.

Mr. CAMERON: My idea is that it is no use waiting and expecting that the Government will push forward any further investigation of our specimens. Would it not be well to push the thing further from this end, and have the very highest possible scientific evidence upon the specimens. It is a good many years since I was thoroughly convinced that there are other interests besides pure science which animated the decisions not of the present Agricultural Department, but of the old Veterinary Department of the Privy Council. It is a good many years ago that I was convinced that there were other interests than science that affected them, and I have not the slightest doubt that they are in operation still.

Mr. BOYD said he would not ask the Professor to withdraw one word of what he had said. Professor Williams has given his decided opinion that it was not pleuro-pneumonia, while Professor Brown had given it as his opinion that it was pleuro-pneumonia, and all the veterinary surgeons were held in derision in this matter. They had not had an opportunity of giving their opinion on the subject, and he would certainly force an investigation to decide whether Professor Williams or Professor Brown was correct. He did not think they should ask Professor Williams to withdraw one word.

Principal WILLIAMS: If my wife were to ask me I would not withdraw. We have asked for an investigation, and you see how we have been treated.

Mr. STORIE: Apart from the question whether the disease is pleuro-pneumonia or broncho-pneumonia, I think that both the present Government and the previous one have been very much to blame. I think the matter lay entirely in their own hands, and it would have been very simple indeed for either of the two Boards of Agriculture to have proven whether the disease was pleuro-pneumonia or not. They had, as Mr. Rutherford stated, inoculation to work upon, and I think it was their duty to prove to the satisfaction of the country the real state of affairs, whether the disease was pleuro-pneumonia or broncho-pneumonia. I think that instead of all this agitation the matter should have been settled without us having to move in the matter.

The CHAIRMAN: I think I have been as much amongst this agitation as most of you. I come from the very centre of this agitation, and I may say that a very serious agitation has been going on among the farmers of Fifeshire, Perthshire, and Forfarshire, and I don't wonder at it. The fact is that if the Privy Council have to carry out this system of slaughter with every consignment of cattle that arrives here, then feeders, at all events, will be in a very bad way indeed. I do not want to commit myself in any way; in fact I cannot. Like Mr. Rutherford, I am not an expert with the microscope. I have seen a great deal of pleuro-pneumonia contagiosa, and I have also seen a great deal of what is known as sporadic pleuro-pneumonia. We have also had very largely a form of septic pleuro-pneumonia. I have seen an article on this very subject recorded in a Board of Agriculture work recently published by a Fife veterinary surgeon, Dr. Coles. With reference to what Professor Williams says I think he is perfectly consistent in his case for broncho-pneumonia. I can well remember in 1879 having seen at the Veterinary College samples of this same disease, and so far as my recollection carries me the disease that I

saw then is exactly the same as that seen now. Then the other point where I think the Veterinary Department of the Government have gone very seriously wrong is in not submitting the specimens to some expert, Mons. Nocard for instance. My reason for mentioning his name is that all personal interests would be laid aside. I am only suggesting this as being satisfactory all round, especially to the farmers in Forfarshire and the North, who would be satisfied with a declaration by Nocard. Another thing which strikes me is the fact that 1,200 cattle could be consigned from Canada to this country, and although eight weeks elapsed only five animals should be affected. I think that is a sufficient reason at all events why we should have an investigation. I think, gentlemen, that is all I have to say on the matter.

Mr. CAMERON said that either they were making a derision of their profession, or else those in London were, and he thought they should give facilities for proving themselves innocent or the Government officials guilty.

Principal WILLIAMS: Here are the specimens to be submitted. Appoint a commission to-day, and prove me right or prove me wrong.

Professor HUNTER: I would make a strong point that inoculation should be performed. I think the result of inoculation as already carried out in Canada, and Queensland, and the United States, are conclusive enough, and if the thing were repeated in this country I think the results would go much further to convince not only the non-professional men who are not able to judge of very fine distinctions, but even a large number of professional men who are able to judge of the symptoms.

Principal WILLIAMS: I should like a resolution that this matter should be further investigated by the authority of this Society. Somebody else should examine this piece of lung; it may not cost much. Appoint a commission if you like.

Mr. RUTHERFORD: Let us send a small section to Dr. Young and another to Professor Hamilton.

Principal WILLIAMS: I would not accept Dr. Young. He does not know pleuro-pneumonia; he says it is bronchitis. Professor Hamilton I don't object to.

Mr. RUTHERFORD: Let us send sections to Mr. Crookshank, Professor Nocard, and Professor Greenfield.

Principal WILLIAMS: What has Crookshank done?

Mr. RUTHERFORD: Most of them have written on the subject.

The CHAIRMAN: Who is to pay the piper? It would be a great pity to involve the Association in the payment of any expense.

Principal WILLIAMS: Very well, gentlemen, I will ask the Highland Society to do it.

The CHAIRMAN: I am prepared to give a subscription for the purpose. Do not suppose that I intend to throw cold water on the scheme, but as President I do not think I would be doing my duty if I did not point out that we have not funds to go in for an object of this kind.

Mr. RUTHERFORD: I confess myself it would not matter if we had the written opinions of 5,000 experts. The Government of this country are tied to the opinions of their veterinary staff. They must take their opinion or dismiss them. They cannot possibly have a staff and not be guided by their advice. That is the case with all Governments and all executive staffs. There are still means open to us, and there are clinical methods, making ourselves certain whether this is pleuro-pneumonia. If any experimental methods are adopted I am prepared to assist by my hands and my purse. If pleuro-pneumonia was brought to this country there must be still plenty of it left in Canada.

Mr. CAMERON: We have got the thing here. Why not decide upon it when we have it?

Mr. RUTHERFORD: The Government have committed themselves to an opinion, and they won't listen to us.

Mr. CAMERON: We can deduce evidence that will satisfy the whole country that they are wrong. Surely there are sufficient experts to prove that they are wrong, and after having proved them wrong, we can wait and see what the result will be.

Mr. RUTHERFORD: I do not think it will cost very much. I will pay part of the expense to have this lung examined microscopically, but I think the other tests are those which will satisfy the ordinary clinical mind. This matter cannot end. Send these specimens now to microscopists to be examined. The Government have given their opinion. In their letter to Mr. Leng they have left a loop-hole for inoculation, because they say inoculation won't prove it. We are prepared to say that inoculation can prove it, and we ask them to put it to the test. They cannot say, on the other hand, that contact with others won't produce it. Let them put that to the test. These are quite sufficient to satisfy, not only the veterinary surgeons of this country, but of the whole world.

Mr. CAMERON proposed that specimens be sent to Professor Greenfield, Professor Hamilton, and Mr. Crookshank.

Principal WILLIAMS: Crookshank is associated with the London College. We must have an independent authority—Nocard, if you like.

Mr. RUTHERFORD: Unfortunately Nocard has committed himself to an opinion on this subject.

Principal WILLIAMS: He has not committed himself to an opinion upon this particular lung. Ask the Highland Society to do it; surely they can afford to do so.

Mr. BURNETT: I propose that the Highland Society be requested to take up this subject and have it investigated—that is to say, to have it determined whether the portion of the Fifeshire lung which is still in the possession of Principal Williams is affected with broncho-pneumonia or pleuro-pneumonia.

This was unanimously agreed to and the subject dropped.

Grass Staggers.

The CHAIRMAN stated that the next business was a communication by Mr. James Storrar, F.R.C.V.S., Chester, on the subject of "Grass Staggers in Cattle." This was a criticism of a paper which he himself had delivered at last meeting. He proceeded to read Mr. Storrar's paper which was as follows:—

Mr. James Clark, F.R.C.V.S.
Coupar Angus. *Nov.* 14, 1892.

DEAR SIR,

I have read with great interest the account in *The Veterinarian* of your veterinary meeting at Dundee. The subject, "Grass Staggers," is one in which I take a very great interest, aud one in which I claim to have some little knowledge.

When I was a boy at school, a good many years ago now, my father had three one-year-old bullocks attacked on one day with the symptoms so well understood and expressed by many of the gentlemen present at your meeting. Two died very soon after bleeding and dosing, the third lived to be healed for about three weeks.

The disease was exceedingly common all around Banff, where I then lived, so much so that many farmers dreaded to turn their one-year-olds out on their own farms but rented grass fields at a gentleman's place. The disease was mysterious to all there then, as it is to you and your friends now. Mr. Mari Cuming, who took his diploma in 1846, did not find in Professor Dick's lectures a satisfactory statement as to the nature of this disease, nor of its

cause, and gave the subject his very special attention. He made *post-mortems* and found, visible to the naked eye in some cases, refuse paint—among the rough stones, nails, and other *débris* in the first and second stomachs and sometimes even farther back in the intestinal canal, and when the animal died, having the same symptoms and the poison not visible, analysis always showed the presence of lead. Mr. Cuming was an accomplished analyst, and retained the specimens of his test products with great care and detail for the benefit of the profession. He published his paper in the transactions of the Highland and Agricultural Society, about 1889 or '90. I am sorry I cannot now find a copy, so that I might be definite about it.

I give you a little detail regarding the practical professional aspect of the subject. When Mr. Cuming was collecting facts on which to found a principle he came to my father's house, having heard of my father's loss. He asked, had my father ever carted a painter's midden to his farm? My father did not recollect. I was present and recollected that a bookbinder's midden had been carted, and in the same yard was a painter whose refuse went into the same hole, and memory being thus refreshed, it was thus remembered that lumps of refuse paint were spread in the drills along with other manure for the turnip crop. Next year oats were sown and grass seeds; in May, the following year, during dry sunny weather, the cattle, ate the lead; the paint having been *in* or *on* the land for two years. This is but one of a hundred cases that were traced to refuse lead carted in black muck to the fields all around Banff and MacDuff. From that day till the time I left the district, 17 years after, the disease had almost disappeared, a case being seen only at a country carpenter's shop, or some such accidental manner.

I think I am safe to say that around your several country towns where "town manure" has been carted there the disease is common.

I hope you will excuse me while I detail a case in my practice. In the year 1848, I was young and comparatively unknown, but being near I was hastily called to a large farm where I did not expect to be called, as an experienced and respected veterinary surgeon had attended there for years, although living at a considerable distance. I found several year-olds suffering from lead-poisoning; I said so—the farmer looked incredulous—the manager expressed his surprise. I asked if tradesmen had been about? *No.* If they had carted down manure? *No*, they had been six years on the farm and had not driven any muck, nor had painters or carpenters. I was evidently not believed. I suggested that their ordinary veterinary attendant should be asked to meet me next morning if possible, when, as I had no doubt one or more of the animals would be dead, we could have a post-mortem My suggestion was agreed to. The following morning, as I expected, two were dead: I got a tub by a running stream and washed the contents of the stomachs; among the small stones and other heavy dirt always found in the second stomach, and often in the first and fourth, I found, visible to the naked eye, pieces of old paint, red, blue, and green; this was sufficient to convince my client, his grieve, and my esteemed brother—the lead was there, wherever it came from.

We went to the grass field and examined it but could find no paint. But what was to be done with the field? It was sufficiently fenced for cattle, but not for sheep, and to meet the difficulty a boy was sent to herd the sheep during the day—folding them at night—the master said to the lad he would give him 6d. per lb. for any paint he could find. The lad soon earned a few shillings by his finds and the explanation was forthcoming. The previous tenant had carted manure from Banff for this field the last year he was tenant —six years before. That year he had turnips on the field, these were fed off by sheep, and it was laid down in grass and grazed by sheep for two years till, in the course of rotation, it came again into grass and thus six years had passed before the poisoning occurred.

I must again plead for forbearance while I state further that Mr. Cuming, with whom I became a pupil, expressed himself as willing to stake his reputation on the statement that everyone of these "grass staggers" cases without exception were caused by one or other of the preparations of lead.

I have on more than one occasion endeavoured to get the attention of my professional brethren to this subject, but it has not received the consideration it deserves. I am now practising in this place, after doing so in Aberdeenshire for 17 years; I found the same disease prevalent here when I came, it has almost disappeared now that the *paint floor cloth* and *other lead refuse* is carefully looked for by those who cart black muck.

In explanation of my writing to you I may say that my first intention on reading the report of your meeting was to write a criticism and send it to *The Veterinarian;* but on a previous occasion I wrote in answer to a paper by a friend who wrote on "Staggers," I did not do it in very good taste, and my young friend took mortal offence; so on this occasion I have written to you to do with the paper what you like. As the matter has now been under notice in your district, the minds of your members will be more receptive than if they had not thought of it before. Allow me, therefore, to suggest that this letter may be read at your next meeting and discussed, and if you are satisfield that what I have stated *may be correct*, let it be tested in your practice, and as Mr. Cuming in his own district saved many hundreds of pounds annually to the farmers, so may each one of you to your clients. I observe that you refer to lead poisoning, and that lead is named in our veterinary literature, but no one author has seemed to be able to know the disease in its distinctive character except Mr. Cuming, and those who came closely under his personal tuition.

I am, yours very truly,

JAMES STORRAR.

The CHAIRMAN, on concluding the reading of Mr. Storrar's paper, said: I entirely disagree with Mr. Cuming as to what we call grass staggers in the north arising from lead poisoning. If Mr. Cuming had happened to read Professor Williams' excellent book he will find a very good account of lead poisoning. I have drawn up a number of reasons for dissenting from this paper. This disease is very prevalent in Forfashire, Perthshire, and Fifeshire, and I fancy in Kinkardineshire, and round about that district.

In the first place there is an absence of lead on *post mortem;* that is an absolute fact. 2. The definite period of the year at which the disease is developed is usually from the middle of April until the middle of June and at no other time. I wish special attention to be paid to that. If due to lead poisoning the disease should occur all the year round. 3. The disease appears year after year just from the middle of April until the middle of June, and it just as suddenly stops on the appearance of white clover; that is another absolute fact. 4. There is a constant liability of particular farms to disease; that is another important feature. On special geological formations you get it, and on other geological formations you never get it. 5. The severity of the attacks and the numbers of cattle affected vary with the seasons—it is most prevalent and most fatal after severe winters of black frost. This evidently is due to the uprooting of clovers and permanent grasses, leaving a superabundance of rye grass. It is less severe and fatal when the winter is mild, ensuring an early supply of all the grasses; that is another strange feature in connection with it. 6. If due to lead poisoning the attacks would be common all the season over; that is another important feature, I think. 7. Feeding with artificial foods once or twice daily while at grass, until the critical period is over lessens, and in many cases ensures total cessation of attacks. 8. The disease is found quite as constant and fatal where the use of town manure is unknown. 9. If due to lead, how is it practically unknown in the proximity

of large centres, such as Glasgow, Edinburgh, etc.? I believe it is almost unknown in these districts. It is never seen, and though I worked in the south for a number of years, in Stirlingshire and Northumberland, I never saw a case until I went to the north. 10. It is now an ascertained fact that grass disease seldom, if ever, occurs—at all events, is greatly modified on farms notorious for disease—if precautionary measures are taken to sow a large preponderance of natural or permanent grass to the exclusion of rye grass. That is an important feature, and it has been tested. I have suggested this to clients, and where we used to get disease prevalent year after year, we never get a case now at all. I have here one or two lists of grasses sown, which I consider are very suitable for the purpose. 11. I have never observed dribbling of saliva in grass staggers, this being a symptom of lead poisoning. 12.—Paralysis is not an accompaniment in grass staggers, it is common in lead poisoning. 13. There is no blue line in the gums. 14. Horses are subject to staggers, why not cattle? 15. I have seen sheep fed on refuse hay, with a large proportion of hay seed, show the same symptoms as seen in cattle. Lastly, the disease is known to be most dangerous and fatal on the first year's grass; less so on the second year's grass; and rarely seen on the third year's grass; totally disappearing after this stage, and never seen in permanent pasture. I think the explanation of this is that in the first year, as every agriculturist knows, on some lands the permanent grasses do not come very readily, and particularly, as I stated before, in serious winters of frost, when the permanent grasses are uprooted, and the rye grass is there in abundance.

Well, that is my reply. I just want to draw your attention to this matter of the seeds. I called a few days ago, after I got Mr. Storrar's letter, on a farmer whom I know. The fact is simply that if this farmer were to turn his cattle out after the middle of May, until the middle of June, I believe most assuredly he would lose every animal he has got; but now he has adopted a plan of artificial feeding. I said, "Now tell me, if you please, your recipe for sowing down the seed." I got it, and after I began to look over it and compare it with others, I am not at all astonished at the result. I found that he sowed on each imperial acre 34 lbs. of perennial rye, that is a bushel and a half. We know that this has been done on lots of farms up and down the country. Here is a feature I have noticed in connection with this case. There are 34 lbs. of perennial rye grass, 2 lbs. of red clover, 3 lbs. of white clover, 1 lb. of Cow grass, 1 lb. of Alsyke, and 1 lb. of Timothy, making in all 42 lbs. per acre. Now, the proportion here is, that of natural grasses and clovers; he has 8 lbs. of permanent grass and clovers to the acre, and he has 34 lbs. of perrenial rye. Now, we know, or rather, I believe, that many of the seeds sold are not the seeds represented at all, but are largely rye grass; so that we have here, probably I should say, about nine-tenths of rye-grass on this geological formation. I have here a copy of a recipe I have taken from the Agricultural Research Association, recommending per acre, for grazing, the following:—10 lbs. perennial rye grass, 5 lbs. Italian rye grass, 3 lbs. cock's-foot, 1½ lbs. meadow fescue, 1½ lbs. tall fescue, 2 lbs. poa trivialis, 1 lb. dogs-tail, 3 lbs. English red clover, 2 lbs. cow grass, 1 lb. white clover, 1 lb. Dutch clover, and 1 lb. yellow clover. It all comes to 32 lbs. an acre. The proportion is, that of permanent grasses you have 17, and of rye 15, so that there are actually 2 lbs. more to the acre of permanent grasses than of perennial rye. Another of the farmers in my neighbourhood, I find, has a recipe, which is a much more rational one. He does not reduce the quantity of rye grass very much, but he puts in a very large proportion of permanent grasses and clovers. This recipe is, 28 lbs. Ayrshire rye grass, 4 lbs. Italian rye grass, 4 lbs. cock's-foot, 3 lbs. Timothy, 3 lbs. mixed fescues, 4 lbs. red clover, 3 lbs. white clover, 1 lb. yellow clover, and 1 lb. alsike clover. In all, 51 lbs. per acre. The proportion is, 23 of permanent grasses and clovers, and 28 of

rye grass. That shows a mighty difference. Here is a recipe which I took on chance from a farmer whose animals used never to be without this disease: 18 lbs. perennial rye grass, 5 lbs. Italian rye grass, 3 lbs. cock's-foot, 3 lbs. meadow fescue, 2 lbs. evergreen fescue, 3 lbs. Timothy, and 8 lbs. clover; in all, 42 lbs. per acre. The proportion of natural grasses is 24 to 18.

I think from my investigations and my experience of this disease, that it is due to rye grass, causing acute gastritis.

Principal WILLIAMS: I quite agree that lead poisoning is not the cause of grass disease. I think your exhaustive reply will be very beneficial to the profession.

This was all the business.

PETER MOIR, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

QUARTERLY meeting held at the Blackfriars Hotel, Manchester, December 7th, 1892. The President, William Woods, Esq., occupied the chair. There were 25 members and friends present.

The following gentlemen were nominated for membership:—Mr. Llewellyn Crook, M.R.C.V.S., Manchester; Mr. John Norbury, M.R.C.V.S., Macclesfield; Mr. Edward Nelson, M.R.C.V.S., Hyde.

The SECRETARY reported on several letters and circulars received in connection with the British Institute of Preventive Medicine, and the PRESIDENT entered more fully into the objects of the institution. After some discussion the further consideration of the same was adjourned until the March meeting. It was decided that the day of meeting be altered from the second Wednesday to the first Thursday in the month, and that the hour of meeting be 4 o'clock.

Mr. W. A. TAYLOR was unanimously elected President for the ensuing year.

Mr. W. A. TAYLOR said: I thank you very much, Gentlemen, for the honour you have conferred once more upon me, and I assure you that as far as my efforts shall serve, the reputation and dignity of the Association shall not suffer at my hands.

Messrs. G. G. Mayor and Thomas Briggs were duly elected Vice-Presidents, Mr. J. B. Wolstenholme was re-elected Secretary, Mr. W. Woods was elected Treasurer, and Messrs. John and Alexander Lawson, Auditors.

A cordial vote of thanks was accorded to the retiring officers.

The PRESIDENT then made a communication on the subject of the use of mallein as a diagnostic agent in cases suspected of glanders, in which he stated that he was satisfied from information he had received and from particulars of cases which he communicated to the meeting, that in almost, if not quite all, the cases in which mallein was used, it would definitely decide the question of the presence or absence of glanders, and drew attention to the fact that in affected cases, not only was the temperature usually raised 4° or even 5° F. within a few hours, but at the seat of inoculation occurred almost invariably a hard painful swelling increasing in size for two or three days, together with general dulness and loss of appetite; while in healthy animals there was no reaction whatever—no rise of temperature, or at any rate not more than 1°, and no swelling at all at the seat of inoculation nor interference with the general health. Mr. WOODS then went on to say: I must express my thanks to Dr. Roux, of the Pasteur Institute, for enabling me to bring this communication to your knowledge, which to my mind goes far to prove that mallein is a most powerful and valuable means of diagnosis, which will enable us to completely and thoroughly eradicate glanders from this country; and the similarity of the method of preparation of this material with tuberculin leads me to believe and to hope that in the near future, when our legislature has taken in hand the extirpation of tuberculosis, that we shall have prepared and

perfected tuberculin, the injection of which will determine in the course of a few hours, and with absolute certainty, whether tuberculosis is present in the animal operated upon or not. The value of this can scarcely be estimated, knowing as we do the difficulty of recognising tuberculosis in its early stages, aud the importance of doing so if we are to attempt successfully to eradicate it. I trust that ere long we may have in this country an institution for the preparation of remedies like tuberculin and mallein. I do not know what has become of the ambition of Englishmen, that we are content to lag behind even the least civilised of European nations in the science of preventive medicine. I hope that this stigma may be soon removed, and that the efforts which are now being made may soon result in the formation of a British Institute of Preventive Medicine, in order that we may take our place among the nations of the earth in the study of those diseases which now afflict both man and the lower animals, so many of which ought to be completely eradicated, and their names only permitted to remain in the roll of history.

A hearty vote of thanks was accorded to the President for his most interesting communication.

Mr. W. DACRE said he proposed to make a few remarks on the treatment of quittor, and hoped the members would pardon him in not having prepared a set paper, as the meeting of the Association had been called for a week earlier than he anticipated. The cause of quittor was rarely obscure. It was due to external injury, and in nine cases out of ten the condition was seen at the quarter. There is a painful tumefaction of the part, with more or less suppuration from one or more sinuses. A bad quittor is always a source of anxiety, and one, when reporting on to a client, the surgeon has to speak with considerable uncertainty, both as to duration and result. The usual treatment adopted in such cases by myself, and I presume everybody else, is plugging with corrosive sublimate and afterwards removing with the knife, or other means, any diseased tissue found at the bottom of the sinus. You have now got a hole into which you can put your thumb, and you find that the sinus looks healthy for a few days; you flatter youself that this is not going to be one of those dreadful cases. It heals up, but it eventually breaks out again; the sinus is deeper—in fact, looks as though it were going under the coronary band. You make a dependent orifice and pass a seton through. In time you think the only discharge is from the internal face of the sinus, and you remove the seton hoping that it will drain and heal. Frequently the external orifice closes, and one or more new openings are formed and you still have the trouble to face. We have all been taught that the coronary band must not be interfered with, and that if interfered with the secretion of horn ceases and a false quarter is the result. At the beginning of the present year I had several cases of quittor which all the usual treatment had failed to cure, and I determined to attempt to eradicate the disease. To this end I cast the horse and with tight bandaging made the operation a bloodless one. Then having stripped the quarter, I inserted a probe as far as I could insinuate it, then cut down upon it right through the coronary band. On the face of the lataral cartilage, at about its attachment to the pedal bone, I found a piece of diseased tissue of a pale-green colour. This I had no doubt was the cause of the persistence of the disease. I then out of the tumefied tissues cut a wedge-shaped piece, including the coronary band, right down on to the lateral cartilage; very carefully dissected away a portion of the healthy tissue around the pea-green diseased part, and finaliy removed the diseased portion. The piece taken out was from two to two-and-a-half inches wide on the surface and narrower at the base. The wound was dressed with carbolised oil and tow and tightly bandaged up. This dressing was not removed for abont three days after the operation, after which similar dressings were applied and the case made a good recovery in about a month, without the formation of false

quarter. Since then I have operated upon eight other cases, and in every one have been completely successful, as the horses are sound and working on the Manchester stones. Instead of false quarter the horn seems to be thicker and stronger over the part operated upon, and all that can be seen of the operation are two slight grooves or indents following the lines on which the horn was originally stripped. In several cases, when I had got to the point of the probe as first inserted, I found the sinus went in another direction. It was then necessary to reinsert the probe and follow it to the extremity of the sinus. The same pea-green portion of diseased tissue was recognised in each case. When the wedge of tumefied tissue I have described is taken out, I am very careful to leave the coloured diseased portion to the last, carefully dissecting off with it ¼ inch square of healthy tissue from the face of the cartilage. One of these cases was a kicking mare which it would have been impossible to have treated and dressed in the old manner. As it was, the wound required very little dressing and she made a good recovery. Eight of these cases were light horses; the ninth was a cart horse in which the quittor had resulted from a bruised and suppurating heel of a hind foot. The same treatment was adopted and a similar result arrived at. In several of the cases the disease extended to the laminæ, covering the upper part of the pedal bone, and it was necessary to dissect them off the bone. No unfavourable symptoms appeared. I am very careful to examine the wound with my finger and assure myself that it is perfectly smooth and that no remnants of disease or partly detached tissue remain. It is essential that the operation should be a bloodless one, and from the experience I have had you may operate with impunity. I may here say that the piece of coronary band excised in each of these cases would be from ½ to ¼ inch in length. The hæmorrhage may be controlled by tight bandaging. As I have said, I did not remove the first dressings for three days, but at the same time I closely watch the patient, and if I think there is uneasiness from over-tight bandaging I of course remove the same. Should one or more of these horses die, I shall endeavour to bring before you the feet for inspection. It is my practice to leave the shoe off for about a month.

Mr. Dacre very fully illustrated his remarks by dissected feet and showed, preserved in glycerine, the portion of diseased tissue removed from the base of the sinus in each of the cases.

The PRESIDENT said: I think we have heard perhaps one of the most interesting and instructive papers that I have listened to during my membership of this Association. A good many people have discovered, or fancy they have discovered, successful methods of treatment, and many keep those methods to themselves, rather than take the profession into their confidence. This treatment is bound to cure quittor. The only thing is whether it will leave anything else worse than quittor. The operation as performed in France is much the same as that adopted by Mr. Dacre; but as I have seen it there, they simply cut through with the knife and tear the horn off at the heel, after which the knife is put *under* the coronary band, and a shaving or two of cartilage taken away on the same principle as Mr. Dacre's, but they are most particular to leave the coronary band intact. But the cases I saw were always shod before they got on their feet again. It was astonishing how the horses would get up and walk away immediately after the operation, and how in the course of a fortnight they would be almost in a fit condition for working. This operation is simple in its character, because you can see what you are doing. If, as Mr. Dacre said, it is such a successful operation, I think we might adopt it with safety. Personally, I am very much obliged to Mr. Dacre for bringing forward his paper.

Mr. J. T. THOMPSON said: I have been very interested in the paper which Mr. Dacre has given us. For my own part, I have done similar operations. In a great number of cases I have removed half an inch of the coronary band. In

scores of cases I have taken the whole of the horn and tissues right away under the coronary band to the bottom. I have performed the operation a great number of times and have never seen a foot that has been damaged by it. You could certainly see that it had been a quittor. I used to be afraid to remove the coronary band, but I came to the conclusion that it was no use; you must go clean through. I probe it, have the hoof well rasped away until very thrn, and cut down, removing the horn all about. I generally put on a tourniquet to prevent bleeding. When I have got to the probe I open well out, and get to where this discoloured material is, which is always there.

Mr. HOPKIN then put a number of questions to Mr. Dacre, and elicited the following replies:

Having stripped the horn from the adjacent part, he inserted the probe and took it as a guide, cutting right down to it and following it to its very extremity.

That he took out the before-described wedge of tissue, cutting right down from the exterior to the diseased portion.

That the lower part of the wound being narrower, he had found no difficulty in the wound gradually filling up by granulations.

Chloroform may be used if a practitioner so chooses. After the removal of the horn, Mr. Dacre found that the operation occupied about fifteen minutes.

Mr. HOPKIN expressed his determination to try the method.

Mr. ALAEXNDER LAWSON thanked Mr. Dacre for his paper, and remarked that he had known him for years; he was a very good operator, and that he should certainly try his method.

Mr. W. A. TAYLOR said that he was personally indebted to Mr. Dacre for the paper he had brought forward to-night. The treatment was new in several of its phases, and it certainly bore out the old adage of removing the cause and the effect will cease. He agreed with Mr. Dacre that the cause of the persistence of quittor was usually the presence of some diseased tissue in connection with the lateral cartilage. He had frequently interfered surgically with the coronary band, and certainly, on reflection, could remember that very few false quarters had resulted.

The PRESIDENT having referred to Mr. Dacre's able paper, remarked that from what he had heard that night, a reason for the formation of false quarter and a means for the treatment had been suggested. To him it would appear that the cause of false quarter would be the healing of an injury to the coronary band, with the interposition of a little fibrous tissue between the edges where they met in the centre, and the treatment for the same would be that of removing a portion of the coronary band, including the imperfect portion on which the false quarter was moulded.

Mr. DACRE replied briefly in explanation of what he had already stated. He also remarked that on one occasion, when opening up a sand-crack for the evacuation of a collection of pus at the coronet, he took a portion of the coronary band away from each side of the fissure, and the case made a perfect recovery. The horn was strong and good, and the sand-crack which had existed for years never reappeared.

Of course, he would not perform the operation unless he had a real case of quittor to deal with, but having satisfied himself that such did exist, and having noted the direction of the sinuses, he should certainly operate, and not wait until a long tedious course of injections and blisters had failed in their object. He should not have made the present communication if his observations had been based on a single case, but having had nine in succession, and all of them proving a success, he felt it was his duty to bring the subject before the Society. He might add that, in the case of a mare which was a kicker, he found that after the lapse of a month from the first operation the disease was not cured. A fresh sinus was formed and suppurating. The

second operation was, however, entirely successful. This was the only case in which he had to operate a second time, and it was just possible that the violence of the mare had either interfered in completing the original operation as thoroughly as it might have done, or that the difficulty of attending to the dressings in the after-treatment had been the cause of non-success at the first attempt.

Mr. E. FAULKNER said: With the rest of the previous speakers, I feel myself very much indebted to Mr. Dacre for the very able address given us in this new aspect of foot surgery. With regard to his general principles of surgery, I take it that there is nothing particularly new about it. He goes to the bottom of it, and I think he has taken a broad view in endeavouring to get to the cause, and in doing so found it necessary to adopt a certain procedure. I do not think that all casses of quitter necessitate this method of treatment. On three different occasions I did the same operation to a certain extent, but never before this evening have I known that we could deal with the coronary band in the way Mr. Dacre has told us; and in that particular aspect of the case I am very much indebted. It is a very important thing to know what we can do with certain structures, and for the new information I feel myself very much indebted to Mr. Dacre. I have received on three occasions diseased cartilage of a pea-green colour. I agree with Mr. Dacre that we are to get down upon the offending material. If it happens to be diseased cartilage it must be removed if you are to do any good. I also agree with Mr. Hopkin in the formation of false quarter during the treatment of quittor. I have had false quarter in several cases resulting, as I thought, from injury to the coronary band.

Mr. GREAVES said: I think Mr. Dacre has given us a thorough description of this operation for quittor. I have seen it performed by other veterinary surgeons at other times. I have never performed the operation myself, but during my experience I have seen a good number of cases of quittor, and some of them have got better, without recourse to an operation such as that described by Mr. Dacre. I must say that my opinion about the danger of destroying the coronary substance has altered from what it used to be. I used to think it was a very important thing to remove or destroy the coronary substance, but when we remember that we had scores of cases of treads where the wounds have been so severe that sloughs have come away from out of the coronary substance and no false quarter has resulted, it is evident that a very considerable amount of repair may take place. Mr. Greaves then discussed what really constituted a quittor, and said that he did not think a quittor was present when pus was issuing from the coronet, coming upwards from the sole of the foot, consequent upon an injury in shoeing. He did not think Mr. Dacre's operation was necessary in the treatment of such cases, but if he found that his own ordinary treatment for quittor failed, he should have no hesitation in adopting the method described by Mr. Dacre.

Mr. J. B. WOLSTENHOLME thanked Mr. Dacre for his paper, and remarked that he had had recently three intractable cases of quittor which he had treated with the knife, removing the quarter opening in the coronary band or in the lateral cartilage, and removing small portions of compressed tissue, endeavouring to get the wound healed from the bottom by keeping the sides apart by means of tow saturated with carbonised oil, but again and again the sinuses had re-formed, and it was only after the lapse of months that the cases were cured. No false quarter had resulted, but he thought that had Mr. Dacre's treatment been boldly followed out, much valuable time would have been saved. He should try the operation on the first fitting opportunity.

A cordial vote of thanks to Mr. Dacre concluded the business of the evening.

THOS. B. WOLSTENHOLME, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held on November 18th, 1892, in the County Hotel, Newcastle-on-Tyne, the President, Mr. G. R. Dudgeon, of Sunderland, in the chair.

The following members were present:—Messrs. F. Finney, G. Mitchell, D. Macgregor, C. Stephenson, G. Elphick, J. W. T. Moore, J. Gofton, D. Dudgeon, J. B. Nisbet, W. Awde, T. Aikin, H. Hunter, and the Secretary. Mr. G. Durrant, A.V.D., was also present.

New Members.

Mr. Laurence, of Stockton, was elected a member of the Association, and Messrs. Niell and Davidson, of Newcastle, Mr. J. P. Isherwood, of Blyth, and Mr. J. W. Ryder, of Beamish, were nominated for membership. Mr. G. Durrant, A.V.D., was nominated as Hon. Associate.

Institute of Preventive Medicine.

The SECRETARY read a letter from the Secretary to the proposed New Institute of Preventive Medicine, asking for a donation, and the question was deferred until the next meeting, which will be the annual.

Election of Officers.

The following gentlemen were elected to serve for the ensuing year:—

President, Mr. W. Hunter, Newcastle; Vice-Presidents, Mr. F. Finney, Newcastle; and Mr. Hancock, Forest Hall; Secretary and Treasurer, Mr. Hancock, re-elected; Auditors, Messrs. Elphick and A. Hunter, of Newcastle.

Mr. AWDE read the following paper:—

"IS LEGISLATION NECESSARY WITH REGARD TO TUBERCULOSIS, AND IF SO, TO WHAT EXTENT?"

Mr. President and Gentlemen:—

I am very much surprised to find myself in the position which I now occupy, particularly as it is only about ten days since the Secretary asked me to provide some subject for discussion this evening, and having had some little experience of the difficulties encountered in trying to induce members to come forward with papers or other material for discussion, I felt that I could not well refuse, although I was sorely tempted to do so. Having consented, the next difficulty which presented itself was what the subject should be. In choosing the above title I am afraid that you will consider that it has already been discussed threadbare, but it seems to me that the question is one of such vital importance to the health of the community at large that it is high time something was being done in the matter, and therefore I may be excused for bringing it forward again. Owing to the limited time at my disposal I have not been able to treat the subject as I should have liked, and am afraid that you will find little or no new material introduced, but that the old has been hashed up for a second time. Before proceeding to deal with the question of legislation, it will be necessary that something should be said of the disease itself, and it is only proposed to consider Tuberculosis from two standpoints —(1st) Its transmissibility from animal to animal, and (2nd) From animal to man.

Tuberculosis, as is well known to you, is an hereditary disease, and all scientists seem to be agreed that it is caused and transmitted by the comma bacillus which is identical in both man and animals, and that it is practically the same disease in both. The conditions favourable to the development of the disease are—insufficient air space in buildings where cattle are kept, impure air, bad ventilation, defective drainage, exposure, earth floors to lie on

and accumulations of filth about them. I am quite sure that no member of the profession requires to be reminded of the insanitary state in which cattle are kept by the farmers of this North Country of ours. In many of their buildings there is an entire absence of light or fresh air. The byres are very often built in the form of a square and in the middle is a large cesspool or heap of animal and vegetable matter undergoing putrefaction, and which is often the receptacle of all kinds of filth. On moorland farms, where no corn is grown, the animals are often allowed no bedding at all, and are compelled to lie on the ground, which becomes saturated with the solid and liquid excreta. The danger of infection from animal to animal lies in the first place from the hereditary tendency, and it is liable to be transmitted from sire or dam to progeny. Another lies in the respiration by healthy animals of air vitiated by the presence of a diseased one in the same building. The discharges from the body are a source of danger too, but the most fertile source of all is the milk derived from the mammary gland of an animal affected by Tuberculosis. Particularly in this the case in young animals—calves for example—which accounts for the very large mortality experienced in some districts in the rearing of young stock. I am of opinion that contaminated milk is the source of nearly all the cases which arise except from the hereditary tendency. As the disease is on the increase in animals of late years, it will be necessary to offer some explanation of the fact, and I believe that it will be found to arise from crossing too much with young bulls from shorthorn herds, the majority of which herds are known to be veritable hot-beds of the disease. All animals for breeding purposes should be free from the disease but particularly the male, as he may sire thirty or more calves in a year, whereas the female only rears one.

Transmissibility from Animals to Man.

The principal danger to man arises from the fact that milk, particularly that derived from the cow, is the staple food of infants and of young people generally. It is well known, from experiments carried out with this fluid as it comes from the cow, that it is capable of infecting many animals with the disease. Particularly in this the case with the pig, which animal most closely resembles, the human is the arrangement of its stomach and bowels, and it can also be affected by feeding with tubercular matter in a raw state, thus showing the danger there is to the human subject in partaking of milk drawn from a cow suffering from mammary Tuberculosis, as well as the danger arising from imperfectly cooked meat of the same character.

How much of the infantile mortality is to be attributed to this tainted milk of course it is impossible to say, but it is well that the existence of the danger should be pointed out and a remedy provided if possible. There is also another danger to man in the flesh food which he consumes for the building up of his frame. Occasionally it happens that in an animal slaughtered (which to look at before being killed would be called by competent judges prime beef, but is found to be the victim of this insidious disease) and after the carcase is dressed, it not uncommonly happens that on the diaphragm, pleura, peritoneum, etc., there are the remains of tubercular deposits, and such being the case there is a danger to human subjects from the consumption of such beef, unless every portion of tubercular material is properly stripped off. At one time my opinion was that if there were any deposits on the carcase it should not be used for human food at all, but confiscated. I have, however, had good reason to considerably modify that opinion, owing to the experiments which have been carried out with muscle juice in a raw state, and which have demonstrated the small amount of risk there is if proper cooking could be ensured, but this cannot always be done. My opinion now is, that provided a carcase is well nourished with a fair amount of fat, and all tubercular

material dissected away, I should pass such a carcase as fit for human food, and consider that there is little danger from the consumption.

Legislation.

Having considered the sources of the disease and the two ways in which it can be conveyed to man, it will be necessary to consider the questions —(1st) Is legislation necessary with regard to Tuberculosis? and I think this question can be answered in the affirmative by the whole of the veterinary profession; but when we come to consider the extent of such legislation we shall probably find great differences of opinion.

The object of legislation with regard to Tuberculosis must be (1) to prevent the introduction of disease into the human system from animals affected by the diseases *(a) of milk, (b) of flesh;* (2) to protect animals from becoming affected by the disease.

Protection of Man.

What must be done under the first head to protect man from contracting the disease from animals is first of all to ensure a pure milk supply. But how is this to be done? At present the thing is utterly impossible, because the Dairies and Milkshops' Order only provides that local authorities shall keep a register of dairies and milkshops and shall make their own provision as to water supply, drainage, paving, light, ventilation, etc., and the result is that the number of cubic feet of air which is allowed by the local authorities varies from 600 to 800. So far so good, but the most important part of all is omitted and that is to provide for a thorough inspection of the cows that produce the milk, and to ensure that they are in a healthy state. The inspection of dairy cows seems to me to be an urgent necessity, particularly as the disease is most common among those animals kept in town dairies entirely for milking purposes, and this being so the inspection should be conducted by duly qualified veterinary surgeons at stated periods—say once a month—when any defects as to sanitation, etc., could be pointed out at the same time. The inspection of meat must also be introduced in order to protect the public health from this source of danger, and the first step to be achieved in this direction and to make such inspection effective, is the erection in large towns of public slaughter-houses, where it would be possible to see the internal organs after removal from the carcase as well as the carcase itself. A check could then be kept upon the meat coming in from outside, and it would stop or control the hateful traffic which goes on in the majority of our large towns in what is vulgarly known as "slink beef." In too many cases the animals are slaughtered in order to save them from a natural death. Stockton has an unenviable reputation in this class of trade, but a good deal of it is overlooked or winked at, owing to the difficulty there is in making a proper inspection. A central authority ought to have the carrying out of these measures entrusted to it. I would suggest the Board of Agriculture, in order to make them uniform throughout the country. Eight hundred cubic feet of air should be the minimum quantity allowed for each dairy cow. The poor cow has been blamed within the last few years for producing scarlet fever in the human subject, but really this is too hard on the animal, as she is quite innocent, but I well remember a few years ago attending at a farmhouse in order to see a cow suffering from small-pox.

Protection of Animals.

These measures must be of two kinds, and directed either to the limiting of the disease by checks or to stamping it out altogether, which I am afraid would be of too expensive a character to be undertaken by any Government for a single moment, and also on account of the opposition they would

encounter because of the widespread character of the disease and also because (as I stated in a former part of this paper) of the large number of valuable shorthorn herds in this country that are affected by it. It should be scheduled and included in the list of diseases under the Contagious Diseases (Animals) Act, and notification of its existence given to the Authorities. Animals found so affected either in the udder or generally should be isolated from other animals and the milk not allowed to be used either for the food of man or for the rearing of calves. They should be slaughtered and compensation given to the owner, but not to more than half its value. Most veterinary surgeons in advocating legislation on this subject insist on the employment of veterinary inspectors to devote the whole of their time to these duties, but my own opinion is that local men could be appointed in their own district, as is done very often in the case of Medical Officers of Health, and the expense, incurred in dealing with this source of danger to the public health would be slight, compared with what they would be if special inspectors for the work were appointed. Often the Medical Officers of Health in towns are new in private practice, and their appointment and dismissal is subject to the approval of the Local Government Board. In our case no doubt the control would lie with the Board of Agriculture, and I have no doubt that a sufficient number of veterinary surgeons could be found who would do their duty impartially and fearlessly vith a view to the detection and extinction of the disease.

In what way does this disease differ from those already scheduled as contagious diseases and have been dealt with by the legislature? It is hereditary; it is a more insidious disease; has a long period of inoculation difficult to diagnose in some cases or until the disease is sufficiently far advanced. Its consideration and the measures undertaken to limit its spread are of far more importance, so far as the herds of cattle in this country are concerned, than all the other contagious diseases put together, and yet there seems to be a great reluctance on the part of the legislature to deal with it. Why, I cannot say, unless it be on the score of expense. The argument usually advanced against legislation is that owing to the difficulty that sometimes arises in diagnosis mistakes would occur. I am sure that argument could be advanced equally in the case of pleuro-pneumonia, but that has not prevented the suppression of the disease. Granted that there is the possibility of a mistake occurring I don't think that it would often happen. A periodic inspection of cattle used for milking and breeding purposes should be made, and where an animal is found to be suffering from local manifestations of the disease the owner should not be allowed to breed from it, but if possible it might be put up to feed. This should not be attempted where the disease was far advanced, but slaughter resorted to instead and compensation given. Urban and rural inspectors should be appointed all over the country, and then general information would be given to the owners of cattle as to the management of their stock, and it might be paid for under the head of technical education.

Extent of Legislation.

We want the power to stop the using of milk from a cow affected by tuberculosis and to order her destruction if need be. We also require power to compensate the butcher for the confiscation of a carcase if he has paid market value for such an animal. Those who trade in such carcases should be severely punished. Power would be required to restrain the owner from selling an animal in a manifestly diseased condition—say in a market or fair. Compulsory provision of public slaughter-houses, and the abolition of private ones in all large towns, inspection of dairies and meat, so as to avoid anything of a suspicious character being partaken of as food. There are other diseases which would call for attention in the inspection of meat, but to touch on them

is outside the scope of this paper, and need not be mentioned. It is a question as to whether the public is educated sufficiently up to this point, but every means should be used in order to influence public opinion with regard to it and no opportunity should be lost in bringing the matter before the legislators themselves. I think veterinary surgeons who have been appointed lecturers by the various County Councils to give technical instruction to the farming public, could do some good in this direction if they only would. It will be in their province to give information regarding dairy cattle and the breeding and rearing of young calves, and judicious references could be made to the unsanitary condition of stock generally, and the necessity for careful selection being made in the choice of animals for breeding purposes, particularly as to the freedom of the sire from this disease.

And now, gentlemen, having exhausted the subject so far as my time will allow, I must, in conclusion, ask you to be good enough to discuss the subject in a thorough manner, in order to atone for the meagreness of this paper, and I trust that such discussion will bear fruit.

Discussion.

The PRESIDENT, Mr. G. R. DUDGEON, opened the discussion, and in the course of his remarks referred to the anual report of the Board of Agriculture, in which the account of the result of the experiments with tuberculous affected meat and milk is reported.

Thirteen animals were fed on tuberculous meat, ten of which on being killed were found to be affected with the disease. Nine guinea-pigs were fed for a few days on the meat or meat juice of animals affected with the disease, a few died five to six weeks after feeding, the others were apparently healthy until they were killed; also according to Prof. McFadyean's view thorough cooking destroys the infection, but only such thorough cooking as would also destroy its flavour.

Amongst the cattle that had been slaughtered under the recent P. P. Act of the Board, many cases of tubercle were found. It was found that sixteen per cent. of those affected with tuberculosis were cows and heifers in calf, one per cent. bulls, cattle over one year old two per cent., and cattle under one year old one per cent. In Midlothian about 22 per cent. of the cattle slaughtered had been found affected with tuberculosis. In London and district fifteen per cent. were found diseased. In some of the herds slaughtered the percentage of cows affected with tuberculosis ran as high as 75 per cent.

Mr. C. STEPHENSON said he could not agree with Mr. Awde that this disease was hereditary, and this was, he considered, borne out by the statistics quoted by the President, when he stated that the percentage of animals found affected under one year old was only one per cent. He did not think it right that meat should be used from which the diseased portion had been removed. He was inclined to think that the incubative stage of the disease was short, neither was he certain that the milk supply of affected animals will be stopped; but he did think that when butchers bought animals apparently healthy in open market, and they were found on being killed to be affected with the disease and the carcases condemned, they should receive compensation; at any rate it was not the butcher that should be the loser.

Mr. ELPHICK said he was of opinion that fully seventy-five per cent. of the cattle that died in Newcastle were the victims of tuberculosis; he also thought it might be just be possible that tubercular families mixing up daily is the cause of its apparent hereditary tendency, and he felt we had even yet much to learn with reference to this disease. He agreed with Mr. Awde, the writer of the paper, that private slaughter-houses should be abolished altogether and

public abattoirs erected, and veterinary surgeons appointed to attend to the duties attaching to such places.

Mr. D. DUDGEON said he had always looked upon this disease as hereditary, not that he pretended to speak from his own experience, but somebody has said that tuberculosis in man and cattle were identical. He has frequently observed that tubercular families go on and on for years, and he could scarcely account for this unless there was something of a hereditary nature in the disease; he therefore could not quite fall in with Mr. Stephenson's view that the disease was not hereditary. The impression always existed in his mind that it was one of the peculiarities of the disease that it did not show itself until the animals became older. In his opinion both milk and carcases of infected animals should be destroyed, and he would also like to have the disease scheduled.

Mr. C. STEPHENSON wished to state it was not altogether his opinion that he quoted as to the hereditary nature of this disease, but that the most eminent authorities concurred in this view. He also gave an illustration which rather bore out the possibility of hereditary cause arising sometimes, and mentioned the case of a calf which got the disease in this manner, this being the only case he had met with. He also thought they could boast of having something in force in Newcastle, in connection with this disease, that might very well be extended to other places, they having power to seize any animal that is suspicious of tubercle, no compensation being given.

Mr. HANCOCK thought the disease was hereditary, although the animals might be years before they showed signs of it; the diagnosis was sometimes difficult, but in the majority of cases he thought it easily diagnosed, especially in the lungs.

Mr. AWDE, in the course of his reply said, to his mind he had proved that the disease is hereditary, for he had found calves only three weeks old badly affected. They had been fed on milk. Unfortunately he had not examined the mothers. He also instanced a case of a calf, the third generation of an affected bull being diseased.

Mr. H. HUNTER proposed a vote of thanks to Mr. Awde for coming to give them such an interesting paper.

Mr. ELPHICK seconded, and it was carried.

W. ASHTON HANCOCK, *Secretary.*

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

(Continued from Page 32.)

Professor EDGAR continued the debate. He said his first duty was to thank that Association most heartily for the privilege of being invited to hear the discussion and to offer some remarks, through the kindness of their Secretary. He should like at the outset to express his very great admiration of what he regarded as the most valuable paper produced before any of their Veterinary Medical Associations for a very considerable time. He looked upon Mr. Goodall's paper as dealing with the subject in a way calculated to reflect the greatest possible credit, not only upon the worker but upon the Association to which he belonged, and the profession in general; and he was quite sure the way in which Mr. Goodall had opened up the subject was a clear indication that he was a complete master of a very important branch of their work. He endorsed most emphatically and earnestly, the remarks made by his friend, Mr. Hurndall, with regard to the advantages of keeping up a knowledge of the structure and functions of the different parts of the body. Even if one in the hurry of life was not able to keep up a detailed knowledge of all those things, yet general principles and general outlines were, without much

difficulty or effort, kept before them; and such occasions as that, and such papers, helped to stimulate them in keeping up what he might call their scientific work. They were referred in that paper to the best and safest line of work—that of unravelling nature. The very strongest position of that paper was indicated on page 2, where Mr. Goodall referred to the unerring guide of what he called "The Book of Nature." He wished he had not left the book of nature. He was in a grand boat when he was dealing with the anatomy of the subject. He did not know any work on anatomy which pointed out so succinctly as Mr. Goodall had done the anatomy of these parts; and it should certainly be in the hands of every teacher of anatomy of the horse. He believed there were very confused notions among students as to that special subject, owing to the confusion of the teaching in the veterinary schools, even at this advanced stage of knowledge. He was convinced they could not produce anything which could be compared with the work Mr. Goodall had done; and if he wished to confer a valuable gift on one of the colleges, he could not do better than transfer his specimens to one of the museums.

When he got on the subject of physiology, however, Mr. Goodall left his strong and safe position, and began to run his bark on the banks, as, for instance, in his reasoning with regard to the function of the air passages. But what disappointed him (Prof. Edgar) most of all in a paper of that kind—which would otherwise be unique in its value—was that he scuttled his ship when he came to the clinical aspect of the case. One would have expected to receive at the hands of such a patient and care-taking worker—such an observer of nature as Mr. Goodall, the same evenly-balanced mind, the same treatment in dealing with the whole aspect of the subject, as he had shown in dealing with a part. When they came to the concluding pages—and it was upon this practical side of the question he wished to speak—more especially with regard to the operative and therapeutic matters, then Mr. Goodall made statements as to which he (the Professor) was quite sure he was not of such a sceptical turn of mind as he would make them believe. That part of the paper did not correspond in value or fit in detail with the previous part, and so they lost the advantages which should be derived from such a vast amount of work. The object of an association of that kind in taking up the anatomy and physiology of an organ, was to show its pathological relations, and the diseased condition in their clinical aspect. They were interested in the study of ozœna, not only from the scientific standpoint, but as to the best way to combat that malady when they met it in every-day practice, consequently, he was rather sorry to find that when they got to the end of that very valuable paper, Mr. Goodall—he used the remark lightly—scuttled his ship and cut off. Commencing the paragraph on therapeutic agents, he said, "I have purposely refrained from saying much regarding the agents to be employed in the treatment of diseases of the sinuses. I am no believer in specifics." He did not believe the author of that paper could possibly have meant that, if they were not quibbling about mere terms. He was perfectly certain, for instance, that Mr. Goodall recognised the specific action of quinine in malarial diseases. Take another simple illustration in medicine—the action of salicylates in rheumatism. What other explanation was there than that such drugs possessed a specific action? Then, why should nature be such an unerring guide in anatomy and physiology, and leave us stranded when we came to the position in which we most needed her help? Again, he would ask Mr. Goodall if he believed in what might be called the selective power of tissues upon certain drugs? That was an altogether indisputable fact. No physician with his reputation at stake would go to an obstetric case without taking his ergot of rye with him, because he knew it had a special action on the muscular walls of the uterus. He was not prepared to say whether that action arose

from the nerve centres or from the periphery of the nerve system, or whether its action was, *per se*, on the muscular coats of the uterus. Esserine had an equally specific action on the muscular walls of the intestines. That was another clear proof that certain tissues had a selective power over a certain drug. Then, again, if he injected a drain or two of pilocarpin into the jugular vein of a horse, he should have another splendid demonstration of the specific action of a drug on a special tissue, as a copious flow of saliva would be produced from the parotid glands within ten minutes, while 50 other drugs would have no such action. But they could not follow on that line of argument sufficiently far to be of help in every-day life. If they could they would be able to positively state the actual remedy for every condition. Coming again to the treatment of ozœna, surgically and medicinally, he could not help endorsing most emphatically the statement made by his friend, Mr. Hurndall, with regard to the treatment of that disease by the drug he had named, hydrastis canadensis. He was very sorry Mr. Goodall had only referred them to chloride of zinc and carbolic and boric acids—about the oldest antiseptics known—as there were unquestionable drugs of far greater value in the treatment of that disease. With reference to hydrastis canadensis, it was introduced to the notice of his brother and himself by Mr. Hurndall some three years ago, for trial in veterinary practice. He had known it for a longer period as an agent in human medicine, in the case of his sister, referred to by Mr. Hurndall to show the marvellous selective power of the mucous membrane in the case of that very drug. He quite agreed with Mr. Hurndall that catarrh of any mucous membrane might be combated by the injection of that drug. His (the speaker's) method of proceeding was to inject a solution of hydrastis into the nostrils, and also to administer the drug through the blood stream, so that it acted both through the blood and locally. In discussing Professor Smith's paper last October, he was rather inclined to think all the cases might be dealt with with equal advantage without surgery; but a week or two after that discussion he came across a very obstinate case of ozœna in a horse. Having administered hydrastis for about three weeks, he found the advantages were not what they ought to have been, and he therefore resolved to trephine the maxillary sinus, which he knew was blocked. On opening that sinus he found it quite packed with inspissated pus: but he got a beautiful stream of the hydrastis lotion through to the posterior nares, and that case made a splendid recovery. Other cases had been equally successful.

Mr. Goodall (on page 14) used the term "nasal insufflation," by which he supposed he meant to imply injection with a syringe, with a certain amount of force up the cavity. On page 9 he said, "the mucous membrane at this part is extremely sensitive, a touch induces sneezing; whereas a probe or tube may be passed high up the lower meatus with comparative ease." That was the practical difficulty. Since his friend introduced that drug to him he had treated nearly all cases of catarrh with it, and he had found in practice that after the first time or two it was not so easy a matter. The sneezing propensity came on instantly the syringe was put there; and he had found it much easier to inject with a long syringe, say 5 in., which he now always used. They only needed a nice machine to direct a perfect stream up the nostrils of the horse to make that system of treatment a perfect success. It was a nasty, disagreeable operation, and that alone was often enough to make the treatment imperfect, and therefore a case did not go on so well as it should. He thought they should get a horse far back in his stall, and fix his head high up to the post at the side, so that he could not move, and then they could get the syringe up the nostril and inject pretty fairly. He did not think it would be possible to carry out Mr. Goodall's suggested treatment more than once or twice without throwing the horse, because he did not think a horse would allow them to do it. As to the effect of hydrastis on other mucous membranes

he could testify to its splendid value. The medical profession had known it for the past twelve years, though the homœopathists knew it long before. In *The British Medical Journal* of 1880, some gentleman pointed out the special value of the drug, in regard to the mucous membranes, but, like cocaine, it had until lately been utterly ignored by the medical and the veterinary profession too; but now it was distinguished as one of the best agents to deal with chronic catarrh of the stomach. His sister had suffered for eight or nine years from gastric irritation, and probably an atonic condition of the membrane, and nothing would do her any good—indeed she could not take any flesh food for three years; but after three months treatment with hydrastis her stomach completely regained tone, and ever since she has been altogether free from dyspepsia. He had advised many similar sufferers to take it, and always with the best results. Had such matters as these been added to the paper it would have been a most valuable work of reference; bnt as it was, he considered that if any paper during the present year was worthy of the Steel Medal that paper of Mr. Goodall's certainly was.

Mr. WALKER added his testimony as to the excellence of Mr. Goodall's paper. His disappointment with it was that pointed out by Prof. Edgar, because he had hoped it would have been of assistance in the treatment of ozœna, a chronic case of which he had in hand at the time he read it. He was sure they all thoroughly appreciated the great trouble Mr. Goodall had taken in preparing his paper and specimens, and the Association was very much obliged to him.

Mr. BARFORD wished to bear testimony to the value of Mr. Goodall's paper, and to the great research by which it was distinguished. More of such papers would add very materially to the value of the Association, as well as to the knowledge of veterinary snbjects. That paper would be of great value for many a year to come. He could corroborate what had been said about trephining for that disease. He had himself succeeded well in trephining the submaxillary sinus, and also the frontal sinus. He had used, not with uniform, but with partial success, the preparation of iodoform, which he had injected up the nostrils where the thin discharge existed. If he found any quantity of pus in the sinuses he should not hesitate to trephine.

The PRESIDENT expressed his gratitude to Mr. Goodall for, during his year of office, bringing forth a paper which he was sure was second to none of those read from time to time by members of this Association. In his experience he (Mr. Lepper) had had cases of nasal gleet in which he had been successful, and others which had not been successful. He had treated it with astringents, with disinfectants, with antiseptics, by trephining, with the insufflator, and with the syringe; but he had never met with such success in any of his cases as had attended a case he had treated since their last meeting. He was called to treat a very valuable mare presenting all the symptoms of ozœna. He prescribed iodoform and other drugs; and after three weeks' treatment the mare was in very much the same state. He then remembered a remark made by his friend, Mr. Hurndall, about hydrastis, and wrote him, and he sent full particulars as to how to use it. He followed Mr. Hurndall's directions for a fortnight, at the end of which period there was no discharge whatever. He put her to exercise, and the discharge came on again; but by keeping her quite still in her box, and persevering with the hydrastis for a further three weeks, he was able to send her home perfectly cured. The mare had now been a month in training, and up to the present there had been no return of the discharge. Some might "pooh, pooh" that as "homœopathic treatment," but "the proof of the pudding is in the eating," and personally, he (the President) was glad of that opportunity to tender his grateful thanks to Mr. Hurndall for his kindness.

The following notes from Professor Smith on Mr. Goodall's paper, arrived too late to be read to the meeting :—

"In congratulating Mr. Goodall on his paper, I think he should have shown us a little more sympathy in our ignorance, especially as his knowledge of the anatomy and physiology of the sinuses of the head, according to his own showing, only dates from last winter.

"Referring to food in the nasal chambers, I can quite understand some of it passing into the sinuses, but it is difficult to see how inspiratory efforts drew it into a cavity which could not possibly exert any suction or aspiration upon it. Food as the cause of nasal gleet must, I should think, be uncommon. I never remember reading or meeting with a case where anything resembling food came away from these cavities on opening them, and if I did I should expect to find a bad tooth as the cause of the trouble. There was no food in the pus bags I found in the mule's head.

"If I were to stuff a horse's nostrils up with iodoform, I do not think it would surprise me if a little found its way into the sinus, but I should not use this as an argument that agents simply injected into the nostrils found their way into the cavities of the head.

"We are not so ignorant of the anatomy of the sinuses as Mr. Goodall would have us suppose, I think we all knew that the cavities of the face communicated with the nostril, and further that there were two cavities which did not communicate with each other. Mr. Goodall's "Book of Nature" had revealed this years ago, and I am surprised that he did not know of it till lately.

"I did not say that there was a difficulty in finding the opening in the nasal chambers which communicates with the sinuses ; the difficulty I dwelt on was that experienced in getting a probe into the canal, and I was then thinking of a large whalebone and not a small silver probe. Mr. Goodall's statement that the hole dilates and contracts, supports my statement that difficulty may be experienced in passing a body into the canal.

"In saying that it takes 25 minutes to *expose* the opening, in the dead animal, I was not alluding to the time taken to find it.

"Mr. Goodall finds fault with the sound surgical rule of making a depending opening in the head to drain the sinuses, and with them, of course, the cavities in the turbinated bones ; and then later on admits the value of the practice.

"The reasoning which labours to show that the cavities of the face are essential to the sense of smell leads us into the error of regarding smell as a physical process, like sound. Mr. Goodall would not surely have us believe that the sense of smell is in any way associated with vibrations of the turbi nated bones!

"Mr. Goodall has done good work in pointing out to us some of the anatomical and physiological arrangements of the nasal chambers, the movements of the appendices of the turbinated bones in regulating the capacity of the nasal chambers is especially good ; but I cannot follow the argument that the movement of these can tend to open or close the common opening into the sinuses, nor can I understand hay seeds getting up so high. If Mr. Goodall could see the condition of the nasal chambers of a body of horses after a long dusty march it would rather surprise him ; the dust is so thick that the membrane cannot be seen ; all these horses should run a grave risk of ozœna, probably they would if the dust reached as high as the common opening into the sinuses, though personally I doubt it. The moist nasal membrane is an excellent trap for hay seeds and dust, and I do not think that much passes it.

"Mr. Goodall dwells freely upon my statement respecting tooth extraction. and disease of the sinus. This is what I said on the point :—

"'In conclusion we have the question of dentistry. I believe that where we have got a very chronic discharge or irritation of those sinuses we ought to place beyond all shadow of doubt the fact whether our fourth, fifth, and sixth

molar teeth are sound or not. Even I should go so far as to extract the fourth molar. In one case I did extract the fourth molar. Firstly, I was under the impression that it was diseased, and secondly, I wanted to establish drainage into that horse's mouth.'

"I hardly think that this statement warrants the interpretation placed on it by Mr. Goodall. I *did not advise* a fourth molar being extracted to establish drainage into the mouth, it is not my custom to recommend a practice which I have only tried once, and Mr. Goodall will remember that I cannot have spoken in very enthusiastic terms of this treatment, especially as he had an opportunity of seeing the specimen on the table!

"Since my address on "Ozœna" I have had an opportunity of using hydrastis, so strongly recommended by Messrs. Hurndall and Edgar. My case had been operated upon as usual, but made very little improvement until I washed the sinuses out through three holes in the face with a solution of this drug. The animal rapidly recovered and never showed any signs of recurrence.

"In conclusion I beg to congratulate Mr. Goodall on his extremely able paper.

"FRED. SMITH."

Mr. HURNDALL said Prof. Edgar had referred to the difficulty, after two or three operations, of getting all the patients, that came under their care, to bear with the injection of a solution up the nasal chambers. Strange to say, only two or three days ago he met Mr. Moore, a veterinary surgeon whom they all knew, and who was about the only other person in the United Kingdom, as a veterinarian, who had his (Mr. Hurndall's) belief in homœopathic principles. Mr. Moore rather challenged him upon the subject, saying his father had brought the matter before the public—at all events, in one of the works he had published. He (the speaker) had never seen the work, but had gained his information about the use of hydrastis from the homœopathic "materia medica"—"The action of drugs." However, Mr. Moore told him how he applied the drug, and he thought it might prove useful to others. He put the drug into hot water, and then, by means of an "atomiser," he introduced it up the nostril in the form of a spray. That could be done, he took it, without irritating the horse so much. He hoped Mr. Moore would see that he was not slow to give him credit for any information received from him. In conclusion, Mr. Hurndall mentioned some striking instances of the value of hydrastis canadensis in cases of indigestion and other disorders in the human system.

Mr. GOODALL (who was much pressed for time, owing to the hour to which the debate had been prolonged), replied briefly on the whole discussion, illustrating his remarks with a number of beautifully prepared specimens. Having thanked those present and the other members of the Association for the very courteous and kind way in which they had received his paper, he said that when Mr. Hurndall first wrote to him kindly proposing that he should prepare a paper, he replied, giving the subject he should like to bring forward, and asking him to write to whomsoever he knew to be interested in the subject, that they might be equally well prepared to enter into a discussion. His idea was that an essay should not be written so much for the glorification of the essayist, as for the benefit of the profession. The discussion that afternoon had centred more upon the question of treatment than upon matters of anatomy and physiology. As they would see by the title of his paper, it was intended primarily as an anatomical and physiological demonstration. They should remember that it was written as a kind of sequel to one from Professor Smith, who gave a paper on the subject at a meeting of a kindred association about a year ago, in which he made use of certain statements with regard to the anatomy of the head of the horse, which, from a purely accidental circumstance, he (Mr. Goodall) had found to be wrong.

Having felt that he ought to take some early opportunity of publishing his facts, he began to look into other horses' heads, the result being that he could not help coming to the conclusion that their knowledge of the anatomy of these parts was faulty. He prepared the specimens he had exhibited specially for the purpose of demonstrating this, and having shown where our knowledge had been defective, his only allusion to the treatment was to demonstrate that with this more accurate knowledge, our methods of applying our remedies should be modified.

Sir James Paget, in a recent address to students, remarked that he considered surgery changed every ten years, or, in other words, unless a man was a student all his life, he would soon be unfitted to practice surgery.

Mr. Goodall still thought that the pus bags, mentioned by Professor Smith, would probably have been found to contain particles of food as their centres had a very careful examination been made.

Prof. Smith asked for proof of the opening and closing of the communicating orifice; he (Mr. Goodall) had taken the trouble to prepare a specimen to demonstrate this, and was sorry Prof. Smith could not be present; he showed by his preparation that the outer part of the posterior extremity of the maxillary turbinated bone *was free*, and that it doubtless opened and closed in the form of a *valve* against the inner aspect of the maxillary bone, and the plate forming the base of the ethmoidal turbinated bone.

Prof. Smith then says that though they have been so ignorant, their old methods have been successful; well, that this has not always been so is proved by his having brought his morbid specimens with him on the occasion referred to.

He scarcely knew how to reply to Mr. Hunting. First he ridiculed theology, and he (Mr. Goodall) felt that a man who could (just to take one small instance) look upon such a marvellous adaptation of parts for their purposes, as shown by the beautiful arrangement of the different nasal chambers of the specimens before them, and *profess* that he doubts the existence of a Creative and Ruling Power, could scarcely be regarded as—what should he say ?—sane.

Then he ridiculed, too, the study of what was known as Darwinism. On the other hand, Sir James Paget had on one occasion in an address to the British Medical Association, advocated members of the medical profession taking up the study of the disease of *plants*, pointing out that in that study, "human pathologists may find, in watching the consequences of injuries and diseases of plants, facts of the highest interest in their more proper study." Surely, then, we, the veterinary profession, may learn something that may assist us in accounting for certain causes and effects in our patients proper, by taking up such lines of research as those from which he (Mr. Goodall) had deducted certain facts.

Mr. Goodall then compared the turbinated bones of the horse, hound, and other animals, to show that however different their formation might be they acted in the same way, only that certain parts were more complicated as their functions were more highly developed; as, for instance, the turbinated bones of the fox-hound and fox for the sense of smell—pointing out that by studying comparative anatomy in this way, and going to the lower forms of life, they might cull many of nature's secrets for their own enlightenment.

Again, Mr. Hunting had said that if a violent respiratory effort might cause food or foreign bodies to pass into the sinuses, every day, when a horse was put to violent exertion this would be occurring; but as he (Mr. Goodall) had pointed out, in *normal* respiration, never mind how violent the effort, the corner of the maxillary turbinated bone was drawn into the false nostril and thus closed the middle meatus.

If they rode one horse and led another (which was the best method of studying this), they would find that, as the nostril was dilated by the exercise,

so did the false nostril bulge out, and thus the middle meatus of the nasal chamber was closed. (Demonstrations from fresh subject.) That, as he showed, was most beautifully arranged to protect the sinuses against the entry of foreign bodies. In such an act as choking, however, as all would know who had seen a choking horse, the respiratory efforts were tremendous and altogether abnormal; and then surely it would not be a difficult matter for ingesta to be drawn through this orifice into the sinuses.

Then he said he did not believe the turbinated bones had anything to do with olfaction. Mr. Goodall here demonstrated by an exhibition of the arrangement of the nasal chambers of the hound, fox, cow, etc., that the function of the maxillary turbinated bone is to moisten and rarefy the air before it strikes on the olfactory nerves distributed in the ethmoidal cells, of which, doubtless, the ethmoidal turbinated bone must be regarded as one.

He also very much "mixed up" his (Mr. Goodall's) remarks about the eustachian tubes and the openings of these orifices, and also about the death struggles.

Mr. FAULKNER remarked that it wasusual for Manchester practiti oners to have about six cases of ozœna a year to treat, which (looking at the condition of the atmosphere of that city) rather bore out his (Mr. Goodall's) theory that foreign substances were a possibly overlooked cause. An ordinary *post mortem* by a veterinary surgeon in a case of that kind would be of no use, especially if the horse had been ailing any time; proof of ingesta in the sinuses would have to be sought after very carefully, and perhaps even by analysis. By reference to the paper now printed, Mr. Goodall reminded them that he never suggested the likelihood of the sinuses being *impacted* with ingesta, but that a *very little* would act as a foreign body, and set up so much irritation as to induce inflammation and suppuration.

In conclusion, he repeated that his paper was simply brought forward as a kind of reply to Prof. Smith, and therefore he owed, perhaps, an apology to the Association for not having entered more fully into the question of the treatment of disease of these parts.

A very hearty vote of thanks having been accorded to Mr. Goodall, on the proposition of Mr. BARFORD, seconded by Mr. WILSON, the meeting closed with a similar compliment to the outgoing President.

J. SUTCLIFFE HURNDALL, *Hon. Sec.*

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

A MEETING of this Association was held in the North Eastern Hotel, Darlington, on December 2nd, 1892, at 4 p.m.; F. R. Stevens, Esq., President, in the chair. There were also present, Messrs. J. E. Peele, Durham; G. T. Pickering and H. Snarry, York; G. J. Harvey, W. N. Dobbing, and F. Tonar, Darlington; J. G. Deans, P. Snaith, and H. H. Roberts, Bishop Auckland; Jno. Nettleton, Narthallerton; G. E. Nash, Richmond; A. Peele, West Hartlepool; and W. Awde, Stockton-on-Tees. Apologies for non-attendance were received from Professors Whalley and Williams, Edinburgh, Messrs. T. Greaves, Manchester, and W. T. Briggs, Darlington.

It was resolved that the Secretary be instructed to write to Mrs. Gelsthorpe conveying the sympathy of the members of the Association with her in the great loss she has sustained by the death of her husband.

Mr. SNAITH showed a diseased glans penis which he had amputated from a pit-pony.

Mr. HARVEY stated that he had removed *post mortem* from a horse a kidney which measured 4 feet 6 inches in circumference, and weighed 79 lbs.

The consideration of the communication from the British Institute of Preventive Medicine was adjourned until the next meeting.

As Mr. Briggs was unable to be present, the discussion on his paper on "Parturition in the Mare and some of its complications," was adjourned for his attendance.

Mr. Stevens, M.R.C.V.S., Durham; Mr. Crowe, M.R.C.V.S., Bishop Auckland; and Mr. F. Tonar, M.R.C.V.S., Darlington, were nominated for membership.

Mr. SNARRY then referred to some cases of idiopathic subcutaneous emphysema, which had occurred in his practice (from notes taken at the time), and which he was unable to account for. Some of the cases recorded made a good recovery, while others died. In the majority they were accompanied by lung or chest complications. They occurred in both cattle and horses. The disease had been noticed by Professor Smith in a recent number of the *Journal of Comparative Pathology and Therapeutics*, and was accurately described. Nearly all the members present had seen cases of subcutaneous emphysema, but they were generally due to injuries to trachea or thorax, and in cattle from tympanitis. In Mr. Snarry's cases he had been unable to discover external causes producing them at all.

GLASGOW VETERINARY COLLEGE.

THE Christmas examinations of the Royal College of Veterinary Surgeons were conducted within this Institution on the 17th and 23rd December, 1892. The candidates for diploma were also subjected to a rigid examination on horses, cattle and sheep selected and brought to the College for that purpose. The Board of Examiners included Professors McKendrick, F.R.S., &c., Glasgow; Hamilton, F.R.C.S.E., Aberdeen; Hailliburton, F.R.S., London; George Fleming, C.B., LL.D., &c.; Veterinary Lieut.-Cols. Walters and Duck; Messrs. J. Roalfe Cox, F.R.C.V.S.; Pritchard, M.R.C.V.S.; Duguid, F.R.C.V.S., London; G. A. Banham, F.R.C.V.S., Cambridge; J. Vaughan, F.R.C.V.S., Doncaster; I. Freeman, F.R.C.V.S., Dublin; Almond, Cirencester College; Messrs. Simcocks, F.R.C.V.S., Drogheda; Campbell, F.R.C.V.S., Kirkcudbright; Finlay Dun, F.R.C.V.S., Edinburgh; H. Olver, F.R.C.V.S., Tamworth; W. Woods, F.R.C.V.S., Wigan; James Clark, F.R.C.V.S., Cupar Angus; and R. Rutherford, F.R.C.V.S., Edinburgh. There were also present, as *ex-officio* members, Principal McCall, F.R.C.V.S.; Professors S. Cooke, F.S.S., Wm. Limont, M.A., M.B.; Thomas King, and J. McIntosh McCall, M.B.C.M., M.R.C.V.S.; and W. S. Johnson, Secretary.

The following gentlemen passed the first (or theoretical) part of the final examination:—Messrs. John E. Johnston, Dungannon, Co. Tyrone; Joshua K. Bruce, Meigle, Perthshire (G.C.); T. A. Trotter, Maybole, Ayrshire; John McDougall, Helensburgh, Dumbartonshire; J. R Robins, Alcester, Warwickshire; Wm. Galloway, Dumbarton; John McKie, Paisley, Renfrewshire; and James D. Walker, Wishaw, Lanarkshire. The following gentlemen passed the second (or practical) part of the final examination, and succeeded in obtaining the diploma of the Royal College of Veterinary Surgeons:—Messrs. John McDougall; Wm. Galloway; James Douglas, Kirn, Argyleshire; H. A. Hazeel, Dunson, Argyleshire; George Irvine, Glasgow; H. L. Chambers, Newtownards, Co. Down; J. E. Tooth, Colaba, Bombay; Gordon Stuart, Ballymena, Co. Antrim; Robert Aitkenhead, Pollokshaws, Renfrewshire; John McKie; Joshua K. Bruce (G.C.); J. D. Walker; Thomas A Trotter, and John E. Johnston.

The following students passed the "B" or second professional examination, viz:—Messrs. William McConnell, Londonderry; Wm. L. Webster, Falkirk, Stirlingshire; David Evans, Llandyssal, Carmarthenshire; Robt. Margrave, Swansea, Glamorganshire; Andrew Adams, Glasgow; John H. Wilson, Glasgow; James Steel, Dalry, Ayrshire (G.C.); and David Houston, Port Glasgow, Renfrewshire.

The following students passed the "A" or first professional examination, viz:—Messrs. Robert Armstrong, Belfast, Co. Antrim; James Laird, Coatbridge, Lanarkshire; Hugh Ferrier, Bathgate, Linlithgowshire; David Wyllie, Stewarton, Ayrshire; Robert Griffen, Skerries, Co. Dublin (G.C.); Abraham Wooley, Arran, Buteshire; Andrew Spruell, Paisley, Renfrewshire; L. H. MacQueen, Govan, Lanarkshire; and G. Mayall, Mossley, Lancashire (G.C.)

NATIONAL VETERINARY BENEVOLENT AND DEFENCE SOCIETY.

The Veterinary Mutual Defence Financial Statement.

January 1st to December 31st, 1892.

Cash Received.	£	s.	d.
1892.			
Balance in Bank £157 11s. 6d and in hand £14 0s. 4d. January 1st, 1892	171	19	10
Subscriptions in 1892 paid into Bank	80	1	9
Bank Interest, June £1 9s. 1d. December, £1 13s. 3d...	2	2	4
	£254	3	11

Cash Paid.	£	s.	d.
1892.			
Jan. 8th, Paid Mr. Locke, Defence Society	0	11	6
Jan. 20th, Paid Mr. Meredith, for Defence Society's Rules, &c.	3	19	7
Dec. 30th, Wrappers and Circulars	0	10	0
Dec. 31st, do. 2s. 6d. Secretary's Expenses £1 4s. 6d.	1	7	0
Dec. 31st, Cash in Hand	4	10	3
Dec. 31st, Cash in Bank	243	5	7
	£254	3	11

Audited and found correct,
January 10th, 1893.
James W. Ingram,
Jno. B. Wolstenohlme.

THE NATIONAL VETERINARY BENEVOLENT FINANCIAL STATEMENT.

From January 1st to December 31st, 1892.

	£	s.	d.
1892. Balance in Bank January 1st, 1892 ..	148	1	8
Sir F. Fitzwygram, Donation .. .. : ..	1	0	0
Four Dividends from Mersey Docks	73	7	4
Two Do. from Corporation of Manchester ..	26	6	6
Two Half-years' Interest from Bank	1	18	7
Cash in Mersey Docks ..	1,900	0	0
Cash in Manchester Corporation	900	0	0
	£3,050	14	1

	£	s.	d.
1892. Jan. 8th, Cash paid Mr. Locke for Benevolent Society	1	0	0
Jan. 20th, Cash Paid Mr. Meredith for Chubb's, Deed Boxes, Circulars, and Rules	6	17	1
Feb. 13th, Cobbett and Wheeler, Solicitors, for making Trust Deeds	5	17	9
Dec. 31st, Cash in Bank	236	19	3
Dec. 31st, Cash in Mersey Docks	1,900	0	0
Dec. 31st, Manchester Corporation	900	0	0
	£3,050	14	1

Audited and found correct,
January 10th, 1893.
James W. Ingram,
Jno. B. Wolstenholme.

Thomas Greaves,
Hon. Treasurer.

LIST OF SUBSCRIPTIONS TO THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY, 1892.

January.

	£	s.	d.
Sir F. Fitzwygram ..	1	0	0
G. Rugg	0	10	6
J. C. James	0	10	6
A. W. Mason	0	10	6
Professor Walley	0	10	6
J. M. Axe	0	10	6
A. L. Gibson	0	10	6
J. Rowe	0	10	6
Wm. Elam	0	10	6
Hy. Howse	0	10	6
A. H. Jacobs	0	10	6
Hy. Thompson	0	10	6
James Clark	0	10	6
J. D. Overed	0	10	6
J. B. Tutt	0	10	6
Wm. Roots	0	10	6
John Freeman	0	10	6
Ralf Cox	0	10	6
R. Reynolds	0	10	6
J. W. Anderton	0	10	6
J. J. Collings	0	10	6
F. G. Samson	0	10	6
E. Faulkner	0	10	6
S. Locke	0	10	6
E. Nuttall	0	10	6
C. Sheather	0	10	6
F. H. Stevens	1	11	6
F. H. Riddler	0	10	6
C. Hartley	0	10	6
J. E. Kitchen	0	10	6
F. W. Wragg	0	10	6
E. Bowman	0	10	6
H. Ferguson	1	1	0
H. W. Caton	0	10	6
H. Hogben	0	10	6
G. A. Oliver	0	10	6
Finlay Dun	0	10	6
E. H. Leach	0	10	6
G. F. Pickering	1	1	0
Wm. Carless	0	10	6
T. Danby	0	10	6
J. E. Angers	0	10	6
W. F. Peacock	0	10	6
T. Auberry	0	10	6
E. Charnock	0	10	6
R. C. Edwards	0	10	6
W. Shipley	0	10	6
B. Cartledge	0	10	6
G. Ball and Son	1	1	0
G. A. Bonham	0	10	6
T. A. Dollar	0	10	6
Wm. Dobie	0	10	6
A. S. McQueen	1	11	6
E. Beddard	0	10	6
B. H. Russell	0	10	6
T. Batt and Son	1	1	0
T. G. Chesterman ..	0	10	6
B. Freer	0	10	6
P. Deighton	1	0	6
A. McCormack	1	11	0
J. E. Scrivens	0	10	6
G. T. Pickering	0	10	6
C. Morgan	0	10	6
T. Simpson	0	10	6
J. Woodger	0	10	6
Thos. Secker	0	10	6

February.

W. Woods	0	10	6
T. Hopkins	0	10	6
Peter Taylor	0	10	6
A. Taylor	0	10	6
J. Storrar	0	10	6
J. S. Carter	0	10	6
H. G. Rogers	1	11	6
W. J. Mulvey	1	11	6
Hy. Snarry	0	10	6
F. T. Stanley	0	10	6
A. M. Michealis	1	11	6
Loyd Jones	1	11	6
John Lawson	0	10	6
A. Lawson	0	10	6

March.

W. A. Field	0	10	6
R. Mackinder	0	10	6
T. D. Lambert	0	10	6
F. W. Kendall	1	11	6
O. Trevor Williams ..	0	10	6
G. O. Barrow	0	10	6

April.

Hy. Beard	1	11	6
Hugh Ferguson	0	10	6
J. L. Barling	0	10	6
F. B. Jones	1	11	6

May.

T. Briggs	1	1	0
E. Newsom	1	1	0
A. W. Hoare	1	11	6

June.

J. Leather & Son	1	1	3
J. Ingram	1	11	6

LIST OF SUBSCRIPTIONS—continued.

	£	s.	d.
T. Greaves..	0	10	6
R. C. Trigger	0	10	6
W. Whittle	0	10	6
J. B. Wolstenholme ..	0	10	6
July.			
T. W. Cave	0	10	6
Hy. Olver	0	10	6
T. A. Frost..	0	10	6
Hy. Goodall	0	10	6
W. Bower	0	10	6
R. Cartwright	0	13	6
G. Morgan	0	7	6
F. M. Hill	1	11	6
Hy. Olver	0	10	6
H. R. Perrins	0	10	6
W. Hy. Webb	0	10	6
Professor Williams ..	0	10	6
August.			
J. B. Taylor	0	10	6
September.			
A. Olver	1	0	0
November.			
Hy. Blunt	1	1	0
December.			
T. A. Rudkin	0	10	6
H. D. Charlton	0	10	6
	£80	1	9

Jurisprudence.

DEATH FROM CASTRATION.

AT the Cork Quarter Sessions, held on January 12th by the Recorder of Cork, Mr. Ahern, a farmer, sued Mr. R. Good, described as a veterinary surgeon, residing at Aherlow, Co. Cork, for the recovery of £8, value of a colt alleged to have been lost through a breach of contract. The breach of contract was alleged to consist in the performance of the operation of castration by the defendant's son, whereas the plaintiff had engaged the defendant himself to do it. After the operation the colt died. Mr. Good, jun., was not a duly qualified practitioner, having been only a student for a year. It was also alleged by the plaintiff that Mr. Good, jun., had on the same date operated on a colt, the property of a Mr. Williams, which also died. This colt had, however, been insured against death by the defendant, who was agent for a horse insurance company. It transpired that Ahern had refused to insure his colt, both before and after the operation.

The defence was that the operation was performed by Mr. Good, junior, as skilfully as it was possible to perform it, and that the loss of the colt was attributable to the negligence of the owner.

Mr. Richard Good was examined by Dr. Wynne, solicitor, and stated that his son was skilled in such operations which he had frequently entrusted him with. He watched the operation in question, and it was as skilfully performed by his son as it could be done by any veterinary surgeon.

Cross-examined by Mr. A. JULIAN, solicitor (who appeared for the plaintiff). Witness said he was a certificated veterinary surgeon, but had never been at any college. His son was a student for the last twelve months, but had failed in his first examination—a chemical one. Witness thought, however, that his son was as well qualified to operate as he was. He had charged 7s. 6d. for each operation he had performed on the date on which he operated on the defendant's colt, but his charge would have been higher had he been called to a distance.

His HONOUR, in giving his decision, said he should come to the conclusion that there was negligence in the case. The degree of "V.S." meant something,

and when a gentleman described himself as a veterinary surgeon in a public advertisement, referring to his own skill in this particular operation, and when he did so in a very marked manner, any person sending his colt to be operated on had a right to expect whatever skill this gentleman said he was possessed of. It was negligence on the defendant's part to ask a mere bystander—because His Honour could recognise the defendant's son as a mere bystander, a handy man—to perform the operation. The defendant was also bound to go himself and attend the colt, when inflammation had set in. His Honour could not believe that the congenital skill and the degree of veterinary surgeon were hereditary, and under all the circumstances he would give a decree for £6.

Notes and News.

THE INSTINCT OF LOCALITY IN THE DOG.—A short time ago, Mr. William Younger, who was assistant shepherd on the Berwickshire farm of Northfield, left the district to take charge of a flock of Border Leicesters at Westside, Staindrop, near Darlington. He took with him a valuable collie. After a week's stay on the banks of the Tees, the dog disappeared one night, and turned up at Northfield two days after, "dead beat." The distance from Northfield to Westside is 100 miles as the crow flies, and the dog covered the distance in a little under two days. This is the more remarkable as the dog had never been in the district before, and was taken to his new home by rail.

KNACKERIES IN GERMANY.—According to statistics, the number of knackeries in the Prussian State was 338 up to March 31, 1892. Of these 88 were in Saxony, 88 in Schleswig-Holstein, 38 in Hanover, 35 in Brandenburg, 28 in Silesia, and 23 in the Rhenish provinces. East Prussia showed only 3, West Prussia 6, Pomerania, 8, Hesse-Nassau 4, and Posen only 1. The total number of horses killed, from April 1st, 1891, to March 31st, 1892, was 53,945, one-fifth of which were from Berlin.

FRENCH VETERINARY STUDENTS.—In 1814, when the armies of Wurtemberg and Austria were advancing towards Paris, the bridge across the Marne, which is the key to Paris on that side, was defended by the veterinary students from Alfort, who had solicited permission from the government to defend that post. It was entrusted to them; but they were compelled to retire after a heroic defence, before superior numbers.

HORSES IN LONDON.—There are about 25,000 horses in London engaged in omnibus and tramway traffic. The following are approximate estimates:—London General Omnibus Company, the largest company of the kind in the world, have a stud of 10,000 horses; London Road Car Company, 4,000; North Metropolitan Tramway Company, 4,000; London Street Tramway Company, 1,000; South London Tramway Company, 800; West London Tramway Company, 300; Harrow Road Tramway Company, 200; Deptford Tramway Company, 100, and Edmonton Tramway Company, 100 horses. Besides these, there are probably upwards of 4,000 horses engaged in working 'buses belonging to private proprietors, and the 'buses of our great railway companies. There are about 7,000 horse-shoeing forges in London, and the number of horses of all classes is estimated at no less than 200,000.

THE RETURN OF ORMONDE.—This famous race-horse has returned to England from Buenos Ayres. The arrangements for his future have not yet

been definitely settled, but unless present plans are changed the famous stallion will not receive any public mares in England, but will be reserved for those of his owner, some of which were bought at the Newmarket December sales in the name of "Mr. Francis."

ANSWERS TO CORRESPONDENTS.

M.R.C.—There is no law or regulation controlling professional advertising, and almost daily there are much more flagrant instances to be noted than those you draw our attention to.

E. C. SPARROW.—Dishorning cattle is not unlawful in Ireland or Scotland, but it is so in England. But it is permissible, we presume, to remove the horn-buds from calves if done in a proper manner—such as is shown and described in Fleming's "Operative Veterinary Surgery."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from Mr. J. J. Meyrick, C.B., Winchester; E. Wallis Hoare, Cork; Arnold and Sons, London; J. T. Priest, Manchester; Veterinary-Captain J. Mills, Bombay; Veterinary-Captain J. A. Nunn, Lahore; Veterinary-Lieutenant L. J. Blenkinsop, Lahore; C. R. Marking, Tapplesfield; A. de Marbaix, Meerhont, Belgium; W. Awde, Stockton-on-Tees; W. A. Hancock, Newcastle-on-Tyne; Professor McCall, Glasgow; Professor Billings, Lincoln, Nebraska; P. Moir, Edinburgh; J. B. Wolstenholme, Manchester; T. Greaves, Manchester; H. G. Rogers, London; H. G. Pyle, Cleveland, Ohio, U.S.A.; E. C. Sparrow, Rayleigh; J. Priest, Manchester.

BOOKS AND PAMPHLETS: The Study of the Hamburg Plague; Bulletin des Seances de la Soc. Nat. d'Agriculture de France; Transactions of the Pathological Society of London; Proces-Verbal de l'Academie Royale de Med. de Belgique; *M. A. Railliet*; Les Parasites Transmissibles des Animaux a l' Homme; *Surgeon-General Cornish*, Address to Students of the College of State Medicine; *M. Demarbaix*, Cours de Zootechnie; Encyklopadie der Gesammten Thierheilkunde und Viehzucht; *J. S. Hurndall*, Homœopathy in Veterinary Practice; The Abbatoir System: Agricultural Annual and Mark Lane Express Almanac; *H. G. Pyle*, A Bacterial Disease of Animals.

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